

RDR-GX300

RMT-D205A

SERVICE MANUAL

Self Diagnosis
Supported model



US Model
Canadian Model



SPECIFICATIONS

System

Laser: Semiconductor laser

Channel coverage:

NTSC

VHF: 2 to 13/UHF: 14 to 69/CATV: A-8 to A-1, A to W, W+1 to W+84

Video reception: Frequency synthesizer system

Audio reception: Split carrier system

Antenna: 75-ohm antenna terminal for VHF/UHF

Timer: Clock: Quartz locked/Timer indication:
12-hour cycle (digital)/Power back-up
duration: 1 hour

Video recording format: MPEG Video

Audio recording format/applicable bit rate:
Dolby Digital/2 ch, 256 kbps

When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Inputs

(Jack name: Jack type/input level/input impedance)

LINE IN 1/2/3

(AUDIO): Phono jack/2 Vrms/more than 22 kilohms

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.286 Vp-p

Outputs

(Jack name: Jack type/output level/output impedance)

LINE OUT 1/2

(AUDIO): Phono jack/2 Vrms/10 kilohms

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.286 Vp-p

DIGITAL OUT (OPTICAL):

Optical output jack/-18 dBm (wave length: 660 nm)

DIGITAL OUT (COAXIAL):

Phono jack/0.5 Vp-p/75 ohms

COMPONENT VIDEO OUT (Y, P_B, P_R):

Phono jack/Y: 1.0 Vp-p/P_B, P_R:
interlace*=0.648 Vp-p, progressive or
interlace**=0.7 Vp-p

* "Y/Pb/Pr Out Black Level" is "On"

** "Y/Pb/Pr Out Black Level" is "Off"

SET TOP BOX CONTROL:

Mini jack

General

Power requirements: 120 V AC, 60 Hz

Power consumption: 37 W

Dimensions (approx.): 430 × 85 × 345 mm
(17 × 3 3/8 × 13 5/8 in.) (width/height/depth)
incl. projecting parts

Mass (approx.): 4.8 kg (10.58 lb)

Operating temperature: 5 °C to 35 °C
(41 °F to 95 °F)

Operating humidity: 25 % to 80 %

Supplied accessories:

Audio/video cord (1)

Power cord (1)

Antenna cable (1)

Set top box controller (1)

Remote commander (remote) (1)

Size AA(R6) batteries (2)

Specifications and design are subject to change without notice.

DVD RECORDER

SONY®

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CLASS 1 LASER PRODUCT
LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK △ OR DOTTED LINE WITH MARK △ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)



: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.

Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.

Soldering irons using a temperature regulator should be set to about 350°C.

Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!

- Strong viscosity

Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Usable with ordinary solder

It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

SERVICE NOTE

1.	DISK REMOVAL PROCEDURE IF THE TRAY CANNOT BE EJECTED (FORCED EJECTION)	5
----	---	---

1. GENERAL

WARNING	1-1
Precautions	1-1
Ways to Use Your DVD Recorder	1-1
Quick Guide to Disc Types	1-2
Hookups and Settings	1-3
Hooking Up the Recorder	1-3
Step 1: Unpacking	1-3
Step 2: Connecting the Antenna Cable and Set Top Box Controller	1-3
Step 3: Connecting the Video Cords	1-4
Step 4: Connecting the Audio Cords	1-4
Step 5: Connecting the Power Cord	1-5
Step 6: Preparing the Remote	1-5
Step 7: Easy Setup	1-5
Setting Up the VCR Plus ® System	1-6
Connecting a VCR or Similar Device	1-7
Guide to Displays	1-7
Using the On-Screen Menus	1-7
Using the Title List	1-8
Using the "Disc Info" Screen (disc settings)	1-8
Checking the Play Information and Playing Time	1-9
How to Enter Characters	1-9
Recording	1-10
Before Recording	1-10
Timer Recording (Standard/VCR Plus+)	1-10
Checking/Changing/Cancelling Timer Settings (Timer List)	1-11
Recording Without the Timer	1-11
Recording From a VCR or Similar Device	1-12
Playback	1-12
Playing	1-12
Chasing Playback/Simultaneous Rec and Play	1-14
Searching for a Title/Chapter/Track, etc.	1-14
Playing MP3 Audio Tracks	1-14
Editing	1-15
Before Editing	1-15
Editing a Title	1-15
Creating and Editing a Playlist	1-16
Settings and Adjustments	1-17
Using the Setup Displays	1-17
Antenna Reception and Language Settings (Settings)	1-17
Video Settings (Video)	1-18
Audio Settings (Audio)	1-19
Recording and Parental Control Settings (Features)	1-19
Disc and Remote Control Settings/Factory Settings (Options)	1-20
Easy Setup (Resetting the Recorder)	1-20
Additional Information	1-20
Troubleshooting	1-20
Self-diagnosis Function (When letters/numbers appear in the display)	1-21
Notes About This Recorder	1-21
Specifications	1-22
Guide to Parts and Controls	1-22
Glossary	1-23
Language Code List	1-23
Cable Box/Satellite Receiver Brand Code	1-24

2. DISASSEMBLY

2-1.	UPPER CASE	2-2
2-2.	RD-50 BOARD	2-3
2-3.	D.C. FAN	2-4
2-4.	POWER BLOCK	2-4

2-5.	TRAY COVER ASSEMBLY	2-5
2-6.	DVD DRIVE	2-6
2-7.	FRONT PANEL SECTION	2-7
2-8.	DOOR	2-7
2-9.	FR-216 BOARD, FL-141 BOARD	2-8
2-10.	REAR PANEL	2-8
2-11.	AV-84 BOARD	2-9
2-12.	CIRCUIT BOARDS LOCATION	2-10

3. BLOCK DIAGRAMS

3-1.	OVERALL BLOCK DIAGRAM (1/2)	3-1
3-2.	OVERALL BLOCK DIAGRAM (2/2)	3-3
3-3.	POWER BLOCK DIAGRAM (1/3)	3-5
3-4.	POWER BLOCK DIAGRAM (2/3)	3-7
3-5.	POWER BLOCK DIAGRAM (3/3)	3-9

4. SCHEMATIC DIAGRAMS

4-1.	FRAME SCHEMATIC DIAGRAM	4-1
4-2.	SCHEMATIC DIAGRAMS	4-3
	WAVEFORMS	4-4
• AV-84 (1/8) (POWER)	SCHEMATIC DIAGRAM	4-7
• AV-84 (2/8) (AUDIO IN)	SCHEMATIC DIAGRAM	4-9
• AV-84 (3/8) (AUDIO OUT)	SCHEMATIC DIAGRAM	4-11
• AV-84 (4/8) (TUNER)	SCHEMATIC DIAGRAM	4-13
• AV-84 (5/8) (SYSTEM CONTROL)	SCHEMATIC DIAGRAM	4-15
• AV-84 (6/8) (VIDEO IN)	SCHEMATIC DIAGRAM	4-17
• AV-84 (7/8) (VIDEO OUT)	SCHEMATIC DIAGRAM	4-19
• AV-84 (8/8) (STB CONTROL)	SCHEMATIC DIAGRAM	4-21
• CN-220 (RELAY)	SCHEMATIC DIAGRAM	4-23
• FL-141 (DV/LINE 2 IN/FL DRIVER)	SCHEMATIC DIAGRAM	4-25
• FR-216 (LED DRIVE, FUNCTION KEY)	SCHEMATIC DIAGRAM	4-27
• RD-50 (1/19) (CONNECTOR)	SCHEMATIC DIAGRAM	4-29
• RD-50 (2/19) (VIDEO DECODER)	SCHEMATIC DIAGRAM	4-31
• RD-50 (3/19) (AV GLUE)	SCHEMATIC DIAGRAM	4-33
• RD-50 (4/19) (AV ENCODER)	SCHEMATIC DIAGRAM	4-35
• RD-50 (5/19) (MR PROCESS)	SCHEMATIC DIAGRAM	4-37
• RD-50 (6/19) (AV DECODER)	SCHEMATIC DIAGRAM	4-39
• RD-50 (7/19) (SDRAM)	SCHEMATIC DIAGRAM	4-41
• RD-50 (8/19) (NAZCA)	SCHEMATIC DIAGRAM	4-43
• RD-50 (9/19) (SDRAM)	SCHEMATIC DIAGRAM	4-45
• RD-50 (10/19) (AUDY, DAC)	SCHEMATIC DIAGRAM	4-47
• RD-50 (11/19) (JTAG)	SCHEMATIC DIAGRAM	4-49
• RD-50 (12/19) (SH)	SCHEMATIC DIAGRAM	4-51

• RD-50 (13/19) (SDRAM, NAND FLASH)	
SCHEMATIC DIAGRAM	4-53
• RD-50 (14/19) (SWA/UNSW BUFFER-1)	
SCHEMATIC DIAGRAM	4-55
• RD-50 (15/19) (SWA/UNSW BUFFER-2)	
SCHEMATIC DIAGRAM	4-57
• RD-50 (16/19) (FLASH ROM)	
SCHEMATIC DIAGRAM	4-59
• RD-50 (17/19) (GPS3 (HOST GLUE))	
SCHEMATIC DIAGRAM	4-61
• RD-50 (18/19) (PLL)	
SCHEMATIC DIAGRAM	4-63
• RD-50 (19/19) (POWER)	
SCHEMATIC DIAGRAM	4-65

5. IC PIN FUNCTION DESCRIPTION

5-1. IT CONTROL IC (IC603: N603H2MC-511FPUO (AV-84 BOARD))	5-1
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6. SERVICE MODE

6-1. Checking Item	6-1
6-2. Screen Transition in the Service Mode	6-2
6-3. Service Mode Menu Items and Description	6-3
6-4. Device Check Menu (1/2)	6-3
6-5. Device Check Menu (2/2)	6-3
6-6. Path Check Menu (1/2)	6-4
6-7. Path Check Menu (2/2)	6-4
6-8. Hard Disk Check Menu	6-4
6-9. Device AUTO Check Screen Transition	6-5
6-10. Device Individual Check, Screen Transition	6-5
6-11. Path Individual Check (Pasted Screen Check (visual check) and data check (digital video data auto-check)) Screen Transition	6-6
6-12. Path Individual Check (Audio output Confirmation) Screen Transition	6-6

7. ADJUSTMENT

1. Videl Lev1 Adjustment (RD-046 Board)	7-1
2. Component Video Output Level Adjustment	7-1
3. S-Video Output S-Y Check	7-1
4. S-Video Output S-C Level Check	7-2
5. Component Video Output Y Check	7-2
6. Component Video Output B-Y Chec	7-2
7. Component Video Output R-Y Check	7-2

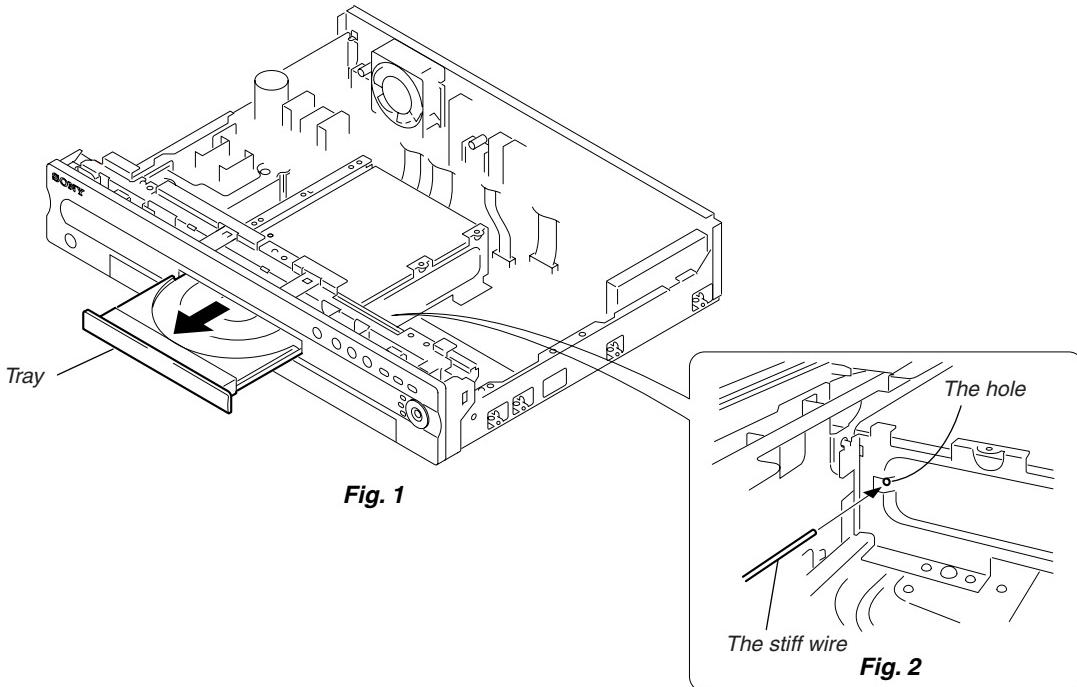
8. REPAIR PARTS LIST

8-1. EXPLODED VIEWS	
8-1-1.OVERALL SECTION	8-1
8-1-2.DVD DRIVE	8-2
8-1-3.CHASSIS BLOCK	8-3
8-2. ELECTRICAL PARTS LIST	8-4

SERVICE NOTE

1. DISK REMOVAL PROCEDURE IF THE TRAY CANNOT BE EJECTED (FORCED EJECTION)

1. Remove the upper case.
2. Remove the RD-50 board, RD bracket.
3. Insert the stiff wire in the hole and eject the tray.



NOTES DURING THE FORCED EJECTION

1. If the forced ejection is executed while a blank disc media (DVD±RW, ±R) exists on the tray
 - Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) in the tray and then close the tray.
Note1: If you close the tray while it is empty, ejection of the tray becomes impossible.
Note2: If you close the tray with a CD disc inserted in it, the CD can be ejected. However, if you close the tray while it is empty, there can be a case that ejection of the tray becomes impossible.
Note3: Even if you replace the DVD drive unit while the tray remains under the state as described above, the situation cannot be improved.
2. If the tray cannot be ejected while the disc is not inserted
 - Execute the forced ejection.
 - Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) on the tray and try to close the tray.
(There are cases that it recovers the trouble.)
3. Contents of forcedly ejected blank disc media (DVD±RW, ±R) can be damaged. (There can be a case that initialization is also impossible.)

MEMO

SECTION 1

GENERAL

This section is extracted from instruction manual.
(RDR-GX300 : 2-024-212-11 (1))

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only. The AC power cord must be changed only at a qualified service shop only.

CAUTION

The use of optical instruments with this product will increase eye hazard. As the laser beam used in this DVD recorder is harmful to eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

CAUTION

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

For customers in the U.S.A.
Owner's Record
The model and serial numbers are located at the rear of the unit. Record the serial number in the space provided below. Refer to these whenever you call upon your Sony dealer regarding this product.
Model No. RDR-GX300
Serial No. _____

Precautions

This equipment has been tested and found to comply with the limits set out in the EMC Directive using a connection cable shorter than 3 meters.

On safety

You are cautioned that any change or modification not expressly approved in this manual could void your authority to operate this equipment.

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio communications, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

VCR Plus and PlusCode are registered trademarks of Gemstar Development Corporation. The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

On power sources

- The recorder is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use the recorder for a long time, be sure to disconnect the recorder from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.

On placement

- Place the recorder in a location with adequate ventilation to prevent heat build-up in the recorder.
- Do not place the recorder on a soft surface such as a rag that might block the ventilation holes.
- Do not place the recorder in a confined space such as a bookshelf or similar unit.
- Do not place the recorder in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not place the recorder in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the recorder and discs away from equipment with strong magnets, such as microwave ovens, or large loudspeakers.
- Do not place heavy objects on the recorder.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.

On recording

- Contents of the recording cannot be compensated for if the recording or playback is not made due to a malfunction of the recorder, disc, etc.
- Make trial recordings before making the actual recording.

Copyrights

- Television programs, films, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.
- This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Copied guard function

- Since the recorder has a copy guard function, programs received through an external tuner (not supplied) may contain copy protection signals (copy guard function) and as such may not be recordable, depending on the type of signal.

IMPORTANT NOTICE

Caution: This recorder is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV screen for a long period of time you risk permanent damage to your television screen. Plasma display panels and projection televisions are especially susceptible to this.

If you have any questions or problems concerning your recorder, please consult your nearest Sony dealer.

IMPORTANT SAFETY INSTRUCTIONS

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use apparatus near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/ accessories specified by the manufacturer.
- 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

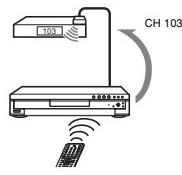
About this manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the recorder if they have the same or similar names as those on the remote.
- The on-screen display illustrations used in this manual may not match the graphics displayed on your TV screen.
- The explanations regarding discs in this manual refer to discs created on this recorder. The explanations do not apply to discs that are created on other recorders and played back on this recorder.

Ways to Use Your DVD Recorder

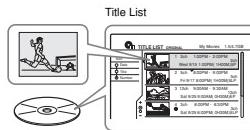
Remote cable box or satellite receiver control – Set top box control

- Connect the supplied set top box controller to have the recorder change the channel of your cable box or satellite receiver during a timer recording (page 14).



Quick access to recorded titles – Title List

- Display the Title List to see all of the titles on the disc, including recording date, channel, recording mode and thumbnail image (page 32). The recorder will automatically take program label information from the XDS (Extended Data Service)* and display it as the title name (page 32).



Play the beginning of a title while it is being recorded – Chasing Playback

- If you are using a DVD-RW (VR mode), you can watch a program from the beginning while it is being recorded (page 57).



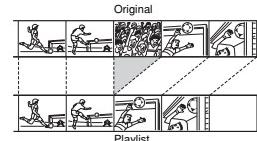
Watching one title while recording another – Simultaneous Rec and Play

- If you are using a DVD-RW (VR mode), you can watch a previously recorded program while recording another program on the same disc (page 57).



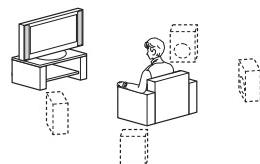
Creating your own program – Playlist

- Record a program on a DVD-RW (VR mode), then delete, move and add scenes as will to create your own, original program (page 65).



Dynamic surround sound – TVs

- Enjoy virtual surround sound effects from just your TV's speakers with the TV Virtual Surround settings when playing a DVD VIDEO with multichannel audio tracks such as Dolby Digital (5.1ch) (page 53).



A list of recordable and playable discs is on page 8.

Quick Guide to Disc Types

Recordable and playable discs

Type	Disc Logo	Icon used in this manual	Formatting (new discs)	Compatibility with other DVD players (finalizing)	Recording Features		Editing Features					
					Rewrite (page 41)	Auto Chapter (page 78)	Manual Chapter (page 65)	Record 16:9 sizes (page 48)	Change title name (page 62)	Delete title (page 63)	A-B Erase (page 63)	Playlist (page 65)
DVD+RW			Automatically formatted	Playable on DVD+RW compatible players (automatically finalized)	Yes	Yes	No	No	Yes	Yes	Yes	No
DVD-RW			Format in VR mode (page 35)	Playable only on VR mode compatible players (finalization unnecessary)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
			Format in Video mode (page 35)	Playable on most DVD players (finalization necessary) (page 36)	Yes	Yes	No	Yes *2	Yes	Yes	No	No
DVD+R			Automatically formatted	Playable on DVD+R compatible players (finalization necessary) (page 36)	No	Yes	No	No	Yes	Yes *3	No	No
DVD-R			Automatically formatted	Playable on most DVD players (finalization necessary) (page 36)	No	Yes	No	Yes *2	Yes	Yes *3	No	No

Usable disc versions (as of May 2004)

- 4x-speed or slower DVD+RWs
- 2x-speed or slower DVD-RWs (Ver.1.1, Ver.1.1 with CPRM*1)
- 8x-speed or slower DVD+Rs
- 8x-speed or slower DVD-Rs (Ver.2.0)

"DVD+RW," "DVD-RW," "DVD+R," and "DVD-R," are trademarks.

*1 CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

*2 Only if the recording mode is SP, HSP, or HQ, and "Rec Screen Size" is set to "16:9."

*3 Erasing titles does not free up disc space.

Discs that cannot be recorded on

- 4x-speed compatible DVD-RWs (Ver. 1.2/4x)
- DVD-RWs (Ver. 1.0)
- DVD+RWs that are not 2.4x-speed compatible
- Dual layer discs
- 8 cm discs

Playable discs

Type	Disc Logo	Icon used in this manual	Characteristics
DVD VIDEO			Discs such as movies that can be purchased or rented
VIDEO CD			VIDEO CDs or CD-Rs/CD-RWs in VIDEO CD/Super VIDEO CD format
CD			Music CDs or CD-Rs/CD-RWs in music CD format that can be purchased
DATA CD			CD-ROMs/CD-Rs/CD-RWs created on a PC or similar device in music format containing MP3 audio tracks

Discs that cannot be played

- All CD-ROMs (including PHOTO CDs)
- CD-Rs/CD-RWs, other than those recorded in music CD format, MP3 format, or Video CD format
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- DVD-RAMs
- HD layer on Super Audio CDs
- DVD VIDEOS with a different region code (see below)
- A disc recorded in a color system other than NTSC, such as PAL or SECAM

Hint

This DVD recorder can play 8 cm CDs and 8 cm DVDs as well.

Note on playback operations of DVD VIDEOS/VIDEO CDs

Some playback operations of DVD VIDEOS/VIDEO CDs may be intentionally set by software producers. Since this recorder plays DVD VIDEOS/VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, see the instructions supplied with the DVD VIDEOS/VIDEO CDs.

Region code (DVD VIDEO only)

Your recorder has a region code printed on the rear of the unit and will only play DVD VIDEOS (playback only) labeled with identical region codes. This system is used to protect copyrights. DVD VIDEOS labeled will also play on this recorder.

If you try to play any other DVD VIDEO, the message "Playback prohibited by region code." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labeled even though playing the DVD VIDEO is prohibited by area restrictions.



Notes

- You cannot mix VR mode and Video mode on the same DVD-RW. To change the disc's format, reformat the disc (page 35). Note that the disc's contents will be erased after reformatting.
- You cannot shorten the time required for recording even with high-speed discs. Also, you cannot record on the disc if the disc is not 1x speed compatible.
- It is recommended that you use discs with "For Video" printed on their packaging.
- You cannot add new recordings to DVD-Rs or DVD-RWs (Video mode) that contain recordings made on other DVD equipment.
- In some cases, you may not be able to add new recordings to DVD+RWs that contain recordings made on other DVD equipment. If you do add a new recording, note that this recorder will rewrite the DVD menu.
- If the disc contains PC data unrecognizable by this recorder, the data may be erased.
- Some DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs, or CD-RWs/CD-Rs cannot be played on this recorder due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software. The disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device.

Music discs encoded with copyright protection technologies

This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are being marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Hookups and Settings**Hooking Up the Recorder**

Follow steps 1 to 7 to hook up and adjust the settings of the recorder.

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this recorder to a TV that does not have a video input jack.
- Be sure to disconnect the power cord of each component before connecting.

Step 1: Unpacking

Check that you have the following items:

- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
- Power cord (1)
- Antenna cable (1)
- Remote commander (remote) (1)
- Set top box controller (1)
- Size AA (R6) batteries (2)

Step 2: Connecting the Antenna Cable and Set Top Box Controller

Select one of the following antenna hookups. Do not connect the power cord until you reach "Step 5: Connecting the Power Cord" (page 20).

If you have	Hookup
Cable box with a video/audio output or a satellite receiver	A (page 13)
Cable box with an antenna output only	B (page 15)
Cable without cable box, or antenna only (no cable TV)	C (page 14)

Using the cable box/satellite receiver control function

The cable box/satellite receiver control function can be used with hookup A or B. It allows the recorder to control a cable box or satellite receiver via the supplied set top box controller. The recorder controls channels on the cable box or satellite receiver for timer recording. You can also use the recorder's remote control to change channels on the cable box/satellite receiver whenever the cable box/satellite receiver is turned on, even if the recorder is turned off. To use the cable box/satellite receiver control function, you need to connect the set top box controller and set the code number and output channel (page 23). After setting up the cable box/satellite receiver control, check that the recorder can correctly control the cable box or satellite receiver (page 26).

Note to CATV system installer (in USA)

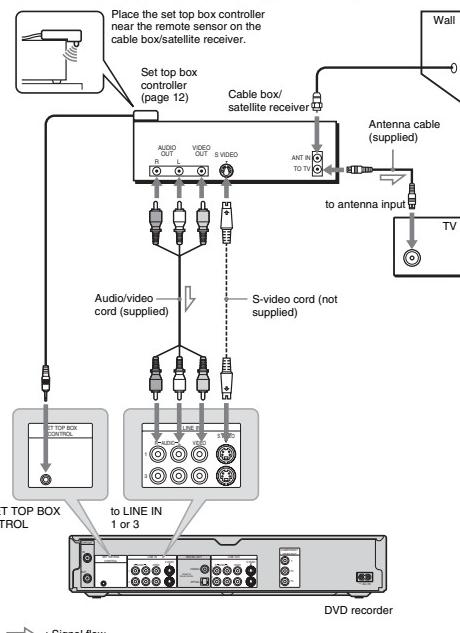
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Notes

- If your antenna is a flat cable (300-ohm twin lead cable), use an external antenna connector (not supplied) to connect the antenna to the recorder.
- If you have separate cables for VHF and UHF antennas, use a UHF/VHF band mixer (not supplied) to connect the antenna to the recorder.

A: Cable box or satellite receiver with a video/audio output

With this hookup, you can record any channel on the cable box or satellite receiver. Be sure that the satellite receiver or cable box is turned on. To watch cable or satellite programs, you need to match the channel on the recorder (L1 or L3) to the input jack connected to the cable box or satellite receiver (LINE IN 1 or 3).



□ : Signal flow

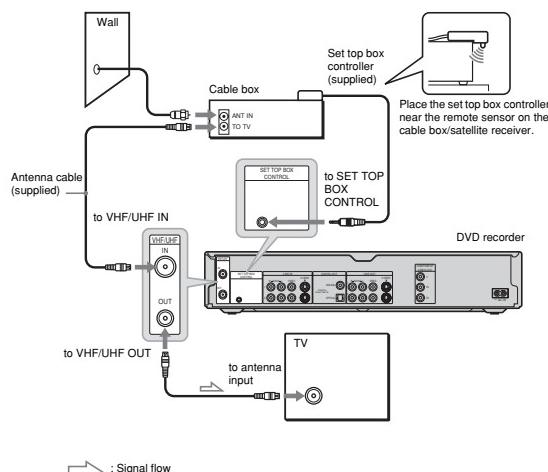
Hints

- If your cable box or satellite receiver has an S-video jack, you can use an S-video cord (not supplied) instead of the audio/video cord.
- If you connect an S-video cord to the LINE IN 1 jack, set "Line1 Input" in Video Setup to "S VIDEO" (page 75). If you connect an S-video cord to the LINE IN 3 jack, set "Line3 Input" in Video Setup to "S VIDEO" (page 74).

B: Cable box with an antenna output only

With this hookup, you can record any channel on the satellite receiver or cable box. Be sure that the satellite receiver or cable box is turned on.

To watch cable programs, you need to match the channel on the recorder (2ch, 3ch, or 4ch) to the antenna output channel on the cable box (2ch, 3ch, or 4ch).

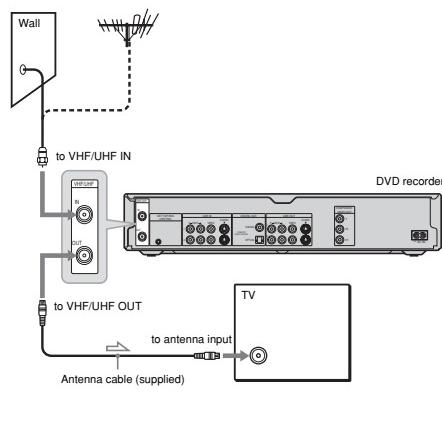


□ : Signal flow

C: Cable without cable box, or antenna only (no cable TV)

Use this hookup if you watch cable channels without a cable box. Also use this hookup if you are using a VHF/UHF antenna or separate VHF and UHF antennas.

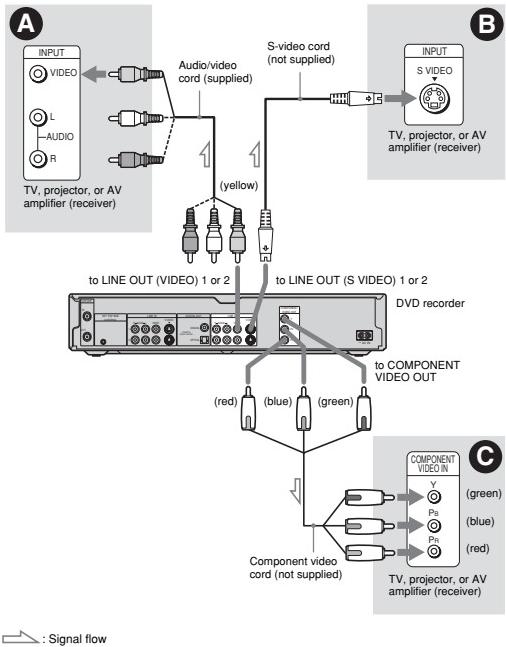
With this hookup, you can record any channel by selecting the channel on the recorder.



□ : Signal flow

Step 3: Connecting the Video Cords

Select one of the following patterns A through C, according to the input jack on your TV monitor, projector, or AV amplifier (receiver). This will enable you to view pictures. Audio connections are explained in "Step 4: Connecting the Audio Cords" (page 18).



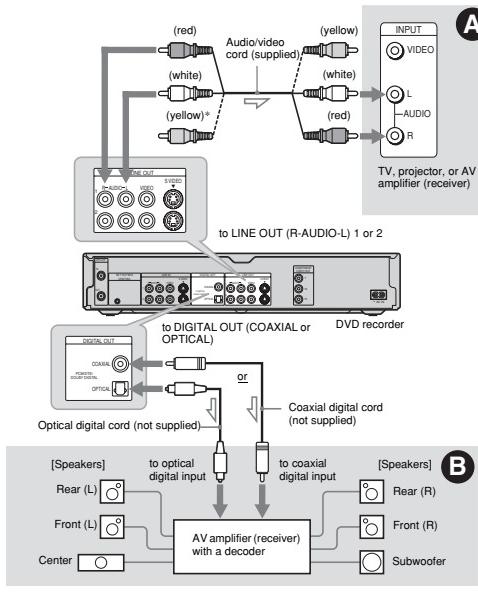
→ : Signal flow

Note

Do not connect more than one type of video cord between the recorder and your TV at the same time.

Step 4: Connecting the Audio Cords

Select one of the following patterns A or B, according to the input jack on your TV monitor, projector, or AV amplifier (receiver). This will enable you to listen to sound.



→ : Signal flow

* The yellow plug is used for video signals (page 17).

Hint

For correct speaker location, see the operating instructions supplied with the connected components.

Note

Do not connect your TV's audio output jacks to the LINE IN (AUDIO L/R) jacks at the same time. This will cause unwanted noise to come from your TV's speakers.

A Connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jack. You will enjoy standard quality images. Note that you cannot use the PROGRESSIVE button with this connection.



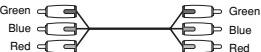
B Connecting to an S VIDEO input jack

Connect an S-video cord (not supplied). You will enjoy high quality images. Note that you cannot use the PROGRESSIVE button with this connection.



C Connecting to component video input jacks (Y, Pb, Pr)

Connect the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate color reproduction and high quality images. If your TV accepts progressive 480p format signals, you must use this connection and then press PROGRESSIVE on the remote to send progressive video signals. For details, see "Using the PROGRESSIVE button" (page 17).



When playing "wide screen" images

Some recorded images may not fit your TV screen. To change the aspect ratio, see page 74.

If you are connecting to a VCR

Connect your VCR to the LINE IN (VIDEO) jack on the recorder (page 29).

Using the PROGRESSIVE button

By using the PROGRESSIVE button on the remote, you can select the signal format in which the recorder outputs video signals: Interface or Progressive. Connect the recorder using the COMPONENT VIDEO OUT jacks (pattern C above), and press PROGRESSIVE repeatedly. "PROGRESSIVE" appears in the front panel display when the recorder outputs progressive signals.

◆ Progressive

Select this when:

- your TV accepts progressive signals, and,
- the TV is connected to the COMPONENT VIDEO OUT jacks.

Note that the pictures will not be clear or no picture will appear if you select progressive signal output when either of the above conditions is not met.

◆ Interface

Set to this position when:

- your TV does not accept progressive signals, or,
- your TV is connected to jacks other than the COMPONENT VIDEO OUT jacks (LINE OUT (VIDEO) or S VIDEO).

◆ Hint

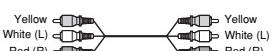
When you select progressive signal output, you can fine-tune the signal according to the type of software you are watching (page 75).

Note

Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of 480 progressive scan picture problems, it is recommended that the user switch the connection to the "standard definition" output. If there are questions regarding our TV set compatibility with this model 480p DVD recorder, please contact our customer service center.

A Connecting to audio L/R input jacks

This connection will use your TV's or stereo amplifier's (receiver's) two speakers for sound. Connect using the audio/video cord (supplied).



- Surround effect (page 53)
TV: Dynamic, Wide, Night

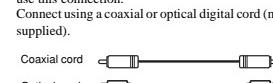


Stereo amplifier (receiver): Standard, Night



B Connecting to a digital audio input jack

If your AV amplifier (receiver) has a Dolby®¹ Digital or DTS®² decoder and a digital input jack, connect using a coaxial or optical digital cord (not supplied).



- Surround effect
Dolby Digital (5.1ch), DTS (5.1ch)



¹ Manufactured under license from Dolby laboratories.
"Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.

² "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Note

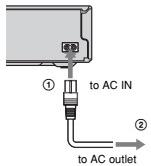
After you have completed the connection, make the appropriate settings under "Audio Connection" in Easy Setup (page 23). Otherwise, no sound or a loud noise will come from your speakers.

* The surround sound effects of this recorder cannot be used with this connection.

Step 5: Connecting the Power Cord

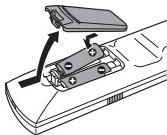
Connect the supplied power cord to the AC IN terminal of the recorder. Then plug the recorder and TV power cords into an AC outlet. After you connect the power cord, **you must wait for a short while before operating the recorder**. You can operate the recorder only after the front panel display lights up and the recorder enters standby mode.

If you connect additional equipment to this recorder (page 29), be sure to connect the power cord only after all connections are complete.



Step 6: Preparing the Remote

You can control the recorder using the supplied remote. Insert two size AA (R6) batteries by matching the \oplus and \ominus ends on the batteries to the markings inside the battery compartment. When using the remote, point it at the remote sensor  on the recorder.



Notes

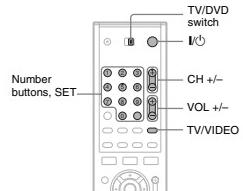
- If the supplied remote interferes with your other Sony DVD recorder or player, change the command mode number for this recorder (page 22).
- Use the batteries correctly to avoid possible leakage and corrosion. Do not touch the liquid with bare hands should leakage occur. Observe the following:
 - Do not use a new battery with an old battery, or batteries of different manufacturers.
 - Do not attempt to recharge the batteries.
 - If you do not intend to use the remote for an extended period of time, remove the batteries.
 - If battery leakage occurs, wipe out any liquid inside the battery compartment, and insert new batteries.
- Do not expose the remote sensor (marked  on the front panel) to strong light, such as direct sunlight or lighting apparatus. The recorder may not respond to the remote.

Controlling TVs with the remote

You can adjust the remote control's signal to control your TV. If you connected the recorder to an AV amplifier (receiver), you can also use the supplied remote to control the AV amplifier's (receiver's) volume.

Notes

- Depending on the connected unit, you may not be able to control your TV or AV amplifier (receiver) with some or all of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Set the appropriate code number again.



1 Slide the TV/DVD switch to TV.

2 Hold down I/O.

3 Enter your TV's manufacturer code (see "Code numbers of controllable TVs" below) using the number buttons.

4 Release I/O.

When the TV/DVD switch is set to TV, the remote performs the following:

I/O	Turns your TV on or off
VOL +/-	Adjusts the volume of your TV
CH +/-	Selects the channel on your TV
TV/VIDEO	Switches your TV's input source
Number buttons and SET	Selects the channel on your TV

Code numbers of controllable TVs

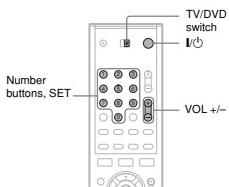
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	01 (default)
Akai	04
AOC	04
Centurion	12
Coronado	03
Curtis-Mathes	12, 14
Daewoo	04, 22
Daytron	03, 12
Fisher	11
General Electric	04, 06, 10
Gold Star/LG	03, 04, 17
Hitachi	02, 03, 04
J.C.Penney	04, 10, 12
JVC	09
KMC	03
Magnavox	03, 04, 08, 12, 21
Marantz	04, 13
MGA/Mitsubishi	04, 12, 13, 17
NEC	04, 12
Panasonic	06, 19
Philco	02, 03, 04, 08
Philips	08, 21
Pioneer	06, 16
Portland	03
Proscan	10
Quasar	06, 18
Radio Shack	05, 10, 14
RCA	04, 10
Sampo	12
Samsung	03, 04, 12, 20
Sanyo	11, 14
Scott	12
Sears	07, 10, 11
Sharp	03, 05, 18

→continued 21

Manufacturer	Code number
Sylvania	08, 12
Teknika	03, 08, 14
Toshiba	07, 18
Wards	03, 04, 12
York	12
Zenith	14, 15

Controlling the volume of your AV amplifier (receiver) with the remote



1 Slide the TV/DVD switch to DVD.

2 Hold down I/O, and enter the manufacturer code (see the table below) for your AV amplifier (receiver) using the number buttons.

3 Release I/O.

The VOL +/- buttons control the AV amplifier's volume. If you want to control the TV's volume, slide the TV/DVD switch to TV.

Hint

If you want to control the TV's volume even when the TV/DVD switch is set to DVD, repeat the steps above and enter the code number 90 (default).

Code numbers of controllable AV amplifiers (receivers)

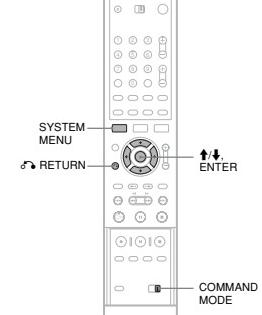
If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

Manufacturer	Code number
Sony	78, 79, 80, 91
Demon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

If you have a Sony DVD player or more than one Sony DVD recorder

If the supplied remote interferes with your other Sony DVD recorder or player, set the command mode number for this recorder and the supplied remote to one that differs from the other Sony DVD recorder or player.

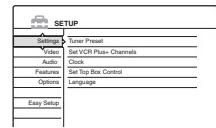
The default command mode setting for this recorder and the supplied remote is DVD3.



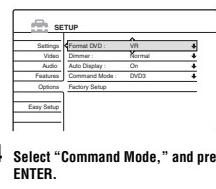
1 Press SYSTEM MENU.

The System Menu appears.

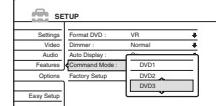
2 Select "SETUP," and press ENTER.



3 Select "Options," and press ENTER.



4 Select "Command Mode," and press ENTER.



5 Select the Command mode (DVD1, DVD2, or DVD3), and press ENTER.

6 Slide the COMMAND MODE switch on the remote so it matches the mode you selected above.

To return to the previous step

Press ↳ RETURN.

Step 7: Easy Setup

Follow the steps below to make the minimum number of basic adjustments for using the recorder. If you do not complete Easy Setup, it will appear each time you turn on your recorder. Settings are made in the following order.

OSD Language Setup

↓

Clock Setup

↓

Cable Box/Sat. Control Setup

↓

Tuner and Channel Setup

↓

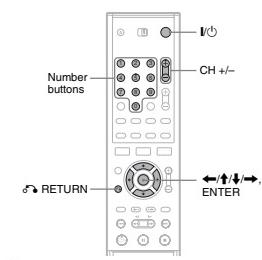
TV Type Setup

↓

Audio Connection Setup

↓

Finished!



1 Turn on the TV.

2 Press I/O.

The recorder turns on.

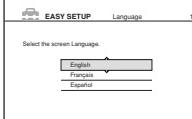
3 Switch the input selector on your TV so that the signal from the recorder appears on your TV screen.

"Initial settings necessary to operate the DVD recorder will be made. You can change them later using Setup. Before you start, check that you have made all necessary connections."

• If this message does not appear, select "Easy Setup" from "SETUP" in the System Menu to run Easy Setup. For details, see "Settings and Adjustments" on page 69.

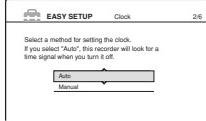
4 Press ENTER.

The Setup Display for selecting the language used in the on-screen display appears.



5 Select a language, and press ENTER.

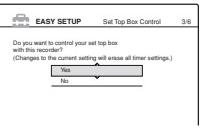
The Setup Display for clock setting appears.



6 Select "Manual," and press ENTER.

Press $\uparrow\downarrow$ to set the month and press \rightarrow . Set the day, year, hour, and minutes in the same way. The day of the week is set automatically. If you used antenna hookup C (page 15), you can select "Auto." The recorder will automatically search for a channel that carries a time signal when you turn off the recorder after finishing Easy Setup.

Once the clock is set, the Setup Display for cable box/satellite receiver control appears.



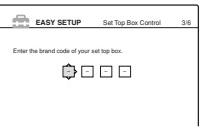
7 Set the cable box/satellite receiver control, and press ENTER.

If you want to use the cable box/satellite receiver control (page 14), select "Yes." If you do not have a cable box, select "No," then go to step 11.

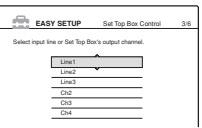
8 Enter the brand code of your cable box/satellite receiver.

See "Cable Box/Satellite Receiver Brand Code" (page 96).

Use $\uparrow\downarrow$ to select the number and $\leftarrow\rightarrow$ to move the cursor.



9 Press ENTER.

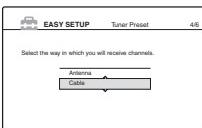


10 Select the cable box output channel.

If you connect your cable box or satellite receiver to the recorder's audio/video input (page 13), select "Line1," "Line2," or "Line3," then go to step 13.

If you connect the satellite receiver or cable box to the recorder's antenna input (page 14), select "CH2," "CH3," or "CH4" and press ENTER, then go to step 13. See the instructions supplied with your cable box to confirm the cable box's antenna output channel.

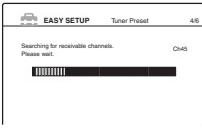
11 Select whether or not you have a cable connection.



If you use an antenna only (no cable TV), select "Antenna." If you use a cable connection without a cable box, select "Cable."

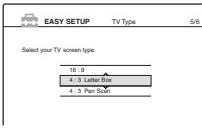
12 Press ENTER.

The Tuner Preset function automatically starts searching for all of the receivable channels and presets them.



To set the channels manually, see page 71. After the Tuner Preset is finished, the Setup Display for selecting the aspect ratio of the connected TV appears.

13 Select the setting that matches your TV type.



"4:3 Letter Box": For standard TVs. Displays "wide screen" pictures with bands on the upper and lower sections of the screen.

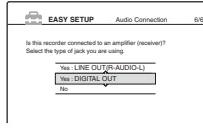
"4:3 Pan Scan": For standard TVs. Automatically displays "wide screen" pictures on the entire screen and cuts off the sections that do not fit.

"16:9": For wide screen TVs or standard TVs with a wide screen mode.

For details, see "TV type" on page 74.

14 Press ENTER.

The Setup Display for selecting the type of jack used to connect to your amplifier (receiver) appears.



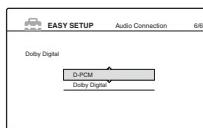
15 Select the type of jack (if any) you are using to connect to an amplifier (receiver), and press ENTER.

If you did not connect an AV amplifier (receiver), select "No," then go to step 19.

If you connected an AV amplifier (receiver) using just an audio cord, select "Yes: LINE OUT (R-AUDIO-L)," then go to step 19.

If you connected an AV amplifier (receiver) using either a digital optical or coaxial cord, select "Yes: DIGITAL OUT."

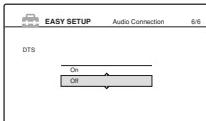
16 Select the type of Dolby Digital signal you wish to send to your amplifier (receiver).



If your AV amplifier (receiver) has a Dolby Digital decoder, select "Dolby Digital." Otherwise, select "D-PCM."

17 Press ENTER.

The Setup Display for the DTS signal appears.



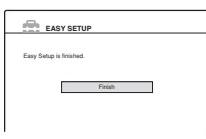
18 Select whether or not you wish to send a DTS signal to your amplifier (receiver), and press ENTER.

If your AV amplifier (receiver) has a DTS decoder, select "On." Otherwise, select "Off."

19 Press ENTER when "Finish" appears.

Easy Setup is finished. All connections and setup operations are complete.

If you use the cable box/satellite receiver control, check that the control works correctly (see below).



To return to the previous step

Press RETURN .

Hint
If you want to run Easy Setup again, select "Easy Setup" in the Setup Display (page 81).

Notes

- If there are only a few channels in your area that carry time signals, setting the clock automatically may take up to about 20 minutes after the recorder turns off. If nothing happens even after you wait about 20 minutes, set the clock manually in "Clock" of "Settings" (page 72).
- To record TV programs using the timer, you must set the clock accurately.
- If you use an S-video cord to connect your cable box or satellite receiver, set "Line1 Input" or "Line3 Input" in Video Setup to "S Video" (page 75).

Checking the cable box/satellite receiver control setting

1 Point the remote at the recorder (not at the cable box/satellite receiver.)

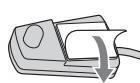
2 Press CH +/- and check that the channel changes on the cable box/satellite receiver window.

3 Press the number buttons and check that the channel changes on the cable box/satellite receiver window.

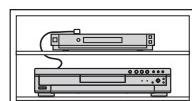
To fix the set top box controller to your cable box/satellite receiver

Once you have confirmed that the set top box controller controls your cable box or satellite receiver, fix it in place.

1 Remove the backing on the double-sided tape.



2 Attach it so that the cable mouse is directly above the remote control sensor on your cable box/satellite receiver.



If you cannot get the recorder to control your cable box/satellite receiver

Check the settings at "Set Top Box Control" in Settings Setup (page 73).

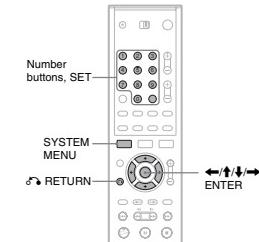
Check the connection and position of the cable mouse (page 13).

If your cable box or satellite receiver still does not operate with this recorder, contact your cable company to see if they can provide you with a compatible cable box or satellite receiver.

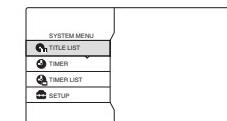
Setting Up the VCR Plus® System

Setting up your recorder involves coordinating the TV channel number (the number you turn to on your TV or recorder to watch a program) with the guide channel (the number that's assigned to that channel in your TV program guide).

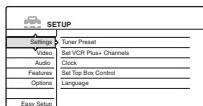
To find the guide channel numbers, look at the "Channel Line-up Chart" in the program guide for your area that features VCR Plus+Code numbers. Use the Channel Line-up Chart to coordinate the guide channel number with the TV channel number. For example, if HBO is listed in the Channel Line-up Chart as channel 33, and the recorder receives HBO on channel 5, coordinate these numbers using the following procedure.



1 Press SYSTEM MENU while the recorder is stopped.



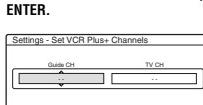
2 Select "SETUP," and press ENTER.



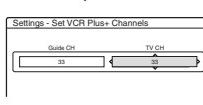
3 Select "Settings," and press ENTER.



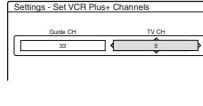
5 Select "Guide CH – TV CH," and press ENTER.



6 Enter the guide channel number assigned in the program guide using the number buttons, and press SET.



7 Enter the TV channel number using the number buttons, and press SET.



If you connected a cable box or satellite receiver to the recorder and set "Set Top Box Control" to "On," enter the TV channel number of your cable box.

If you connected a cable box and set "Set Top Box Control" to "Off," enter the cable box output channel (Usually 2ch, 3ch, or 4ch). See the instructions supplied with your cable box to confirm the cable box's output channel.

8 Repeat steps 5 to 7 for each guide channel number that does not match the TV channel number.

9 Press SYSTEM MENU repeatedly to exit the menu.

To return to the previous step
Press \leftarrow RETURN.

To check the channel settings

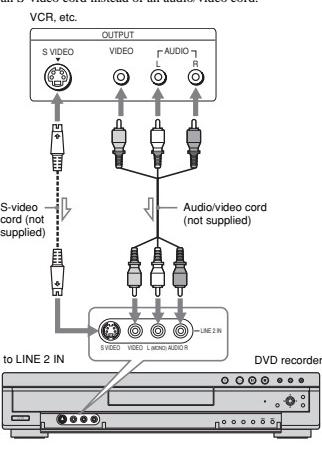
When displaying the "Set VCR Plus+ Channels" menu, select "Channel List," then press ENTER. The display lists the channels for which the guide channel number does not match the TV channel number.

Settings - VCR Plus+ Channel List Page 1			
Guide CH	TV CH	Guide CH	TV CH
2	-	21	45
-	-	22	53
6	-	9	-
-	-	-	-
10	-	101	-
11	-	13	-
-	-	-	-
20	-	28	-
28	-	-	-

To go to the next page, press \downarrow .
To return to the previous page, press \uparrow .

Connecting to the LINE 2 IN jacks on the front panel

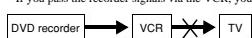
Connect a VCR or similar recording device to the LINE 2 IN jacks of this recorder. If the equipment has an S-video jack, you can use an S-video cord instead of an audio/video cord.



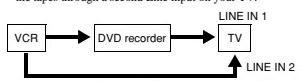
Hint
When the connected equipment outputs only monaural sound, use audio cables that distribute monaural sounds to left/right channels (not supplied).

Notes

- Do not connect the yellow LINE IN (VIDEO) jack when using an S-video cord.
- Do not connect the output jack of this recorder to another equipment's input jack with the other equipment's output jack connected to the input jack of this recorder. Noise (feedback) may result.
- Pictures containing copy protection signals that prohibit any copying cannot be recorded.
- If you pass the recorder signals via the VCR, you may not receive a clear image on your TV screen.



Be sure to connect your VCR to the DVD recorder and your TV in the order shown below. To watch videotapes, watch the tapes through a second Line input on your TV.



• If you disconnect the recorder's power cord, you will not be able to view the signals from the connected VCR.

• Do not connect more than one type of video cord between the recorder and your TV at the same time.

Connecting a VCR or Similar Device

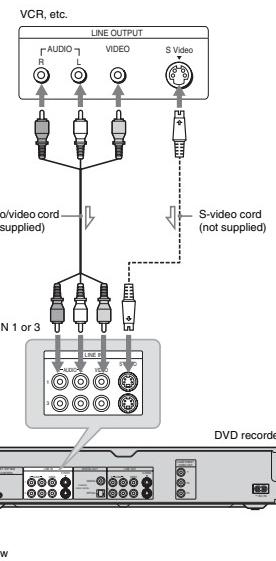
After disconnecting the recorder's power cord from an AC outlet, connect a VCR or similar recording device to the LINE IN jacks of this recorder.

See also the instruction manual supplied with the connected equipment.

To record on this recorder, see "Recording From a VCR or Similar Device" (page 49).

Connecting to the LINE IN 1 or 3 jacks

If the equipment has an S-video jack, you can use an S-video cord instead of an audio/video cord.



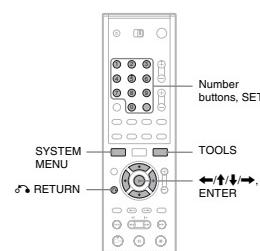
Signal flow

Guide to Displays

Using the On-Screen Menus

+RW -RWVR +RWVideo +R -R DVD
VCD CD DATA CD

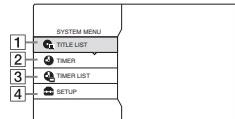
This section introduces the System Menu, TOOLS menu, and sub-menu. By using these displays, you can perform most of the recorder's operations.



System Menu

The System Menu appears when you press SYSTEM MENU, and provides entries to all of the recorder's main functions, such as timer recording and setup.

Select an option by pressing \uparrow/\downarrow and ENTER.



1 TITLE LIST (page 32):

Turns on the Title List menu, which shows recorded titles on the disc.

2 TIMER (page 41):

Allows you to set a new timer recording setting.

3 TIMER LIST (page 44):

Turns on the Timer List menu, which allows you to check, change, or cancel timer settings.

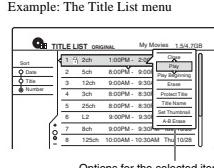
4 SETUP (page 69):

Turns on the Setup Display, which allows you to set up the recorder to suit your preferences.

Sub-menu

The sub-menu appears when you select an item from a list menu (e.g. a title from the Title List menu), and press ENTER. The sub-menu displays options applicable only to the selected item. The displayed options differ depending on the situation and disc type.

Select an option by pressing \uparrow/\downarrow and ENTER.



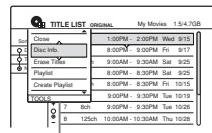
Example: The Title List menu

TOOLS

The TOOLS menu appears when you press TOOLS, and displays options applicable to the entire disc (e.g. disc protection), recorder (e.g. audio settings during recording), or multiple items on a list menu (e.g. erasing multiple titles). The displayed options differ depending on the situation and disc type.

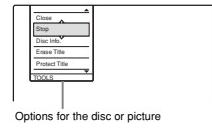
Select the option by pressing **↑↓** and ENTER.

Example 1: When you press TOOLS while the Title List menu is turned on.



Options for the disc or menu

Example 2: When you press TOOLS while a DVD-RW (VR mode) is playing.

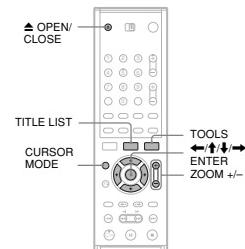


To return to the previous display
Press **RETURN**.

Using the Title List

+RW **-RWVR** **-RWVideo** **+R** **-R**

The titles of programs recorded on a disc are displayed in the Title List.



- 1 Press **OPEN/CLOSE**, and place a disc on the disc tray.



With the recording side facing down

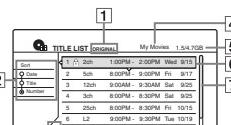
- 2 Press **OPEN/CLOSE** to close the disc tray.

Wait until "LOAD" disappears from the front panel display.

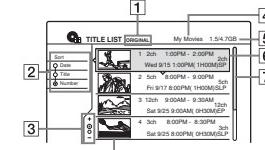
- 3 Press **TITLE LIST**.

To show the list in greater detail (zoom), press **ZOOM+**.

Standard Title List (Example: DVD-RW in VR mode)



"Zoomed" Title List



- 1 Title type (DVD-RW in VR mode only): Displays the title type, Original or Playlist.

- 2 Sort buttons:

Sorts the title order (see below).

- 3 Zooming indicator:

Shows the current zoom status.

- 4 Disc name (page 35)

- 5 Disc space (remainder/total)

- 6 Title information:

Displays the title number, title name, and recording date.

"●" (red) indicates that the title is currently being recorded.

"□" indicates the protected title.

- 7 Scroll bar:

Appears when all of the titles do not fit on the list. To view the hidden titles, press **↑↓**.

- 8 Title's thumbnail picture

To scroll the list display by page (Page mode)

Press CURSOR MODE while the list display is turned on. The display enters Page mode. Each time you press **↑↓**, the entire Title List changes to the next/previous page of titles.

To return to the Cursor mode, press CURSOR MODE again.

About the Title List for DVD-RWs (VR mode)

You can switch the Title List to show Original or Playlist.

While the Title List menu is turned on, press TOOLS and select either "Original" or "Playlist," and press ENTER. "PLAYLIST" appears on the front panel display when "Playlist" is selected.

For details, see "Edit options for DVD-RWs (VR mode)" (page 61).

To change the title order (Sort)

Press **←** while the Title List menu is turned on to move the cursor to the Sort column. Press **↑↓** to select the item, and press ENTER.

Order	Sorted
Date	in order of when the titles were recorded. The title that is recorded most recently is listed at the top.
Title	in alphabetical order.
Number	in order of recorded title number.

To change a title thumbnail picture (Thumbnail) (DVD-RW in VR mode only)

You can select a favorite scene for the thumbnail picture shown in the Title List menu.

- 1 Press **TITLE LIST** while a disc is in the recorder, and press **ZOOM+**.

- 2 Select a title whose thumbnail picture you want to change, and press ENTER.

- 3 Select "Set Thumbnail" from the sub-menu, and press ENTER.

The selected title starts to play in the background.

- 4 While watching the playback picture, press **PLAY**, **PAUSE**, or **◀▶** to select the scene you want to set for a thumbnail picture, and press ENTER.

The scene is set for the title's thumbnail picture.

To turn off the Title List

Press **TITLE LIST**.

→continued 33

32

Hint

After recording, the first scene of the recording (the title) is automatically set as the thumbnail picture.

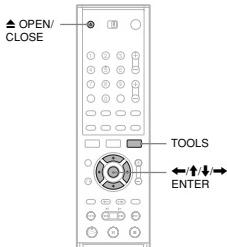
Notes

- The Title List may not appear for discs created on other DVD recorders.
- Letters that cannot be displayed are replaced with an "x".
- Title thumbnail pictures are displayed only on this recorder.
- It may take a few seconds for the thumbnail pictures to be displayed.
- After editing, the title thumbnail picture may change to the first scene of the recording (title).

Using the "Disc Info" Screen (disc settings)

+RW **-RWVR** **-RWVideo** **+R** **-R**

With the Disc Information display, you can check the disc type and remaining disc space. Also, you can perform operations such as formatting and finalizing (page 35).



- 1 Press **OPEN/CLOSE**, and place a disc on the disc tray.



With the recording side facing down

- 2 Press **OPEN/CLOSE** to close the disc tray.

Wait until "LOAD" disappears from the front panel display.

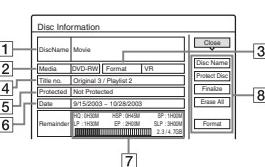
- 3 Press **TOOLS**.

The TOOLS menu appears.

- 4 Select "Disc Info..." and press ENTER.

Items in the display differ depending on the disc type or recording format.

Example: DVD-RW (VR mode)



- 1 "Disc Name"

- 2 "Media": Disc type

- 3 "Format": Recording format type (DVD-RW only)

- 4 "Title no.": Total number of titles

- 5 "Protected": Indicates whether protection is set (DVD-RW in VR mode only)

- 6 "Date": Dates of when the oldest and the most recent titles were recorded

- 7 "Continuous Rem. Time"/"Remainder" (approximate)

- The longest continuous recording time in each of the recording modes

- Disc space bar

- Remaining disc space/total disc space

- 8 Disc setting buttons (page 35)

- "Disc Name"

- "Protect Disc"

- "Finalize"/"Unfinalize"

- "Erase All"

- "Format"

Available settings differ depending on the disc type.

Hint

For DVD-RWs (Video mode) and DVD+RWs, you can check free space and title location on the disc using the Disc Map display (page 64).

Note

On this model, 1 GB (read "gigabyte") is equivalent to 1 billion bytes. The larger the number, the larger the disc space.

Labeling, protecting, or formatting a disc

+RW **-RWVR** **-RWVideo** **+R** **-R**

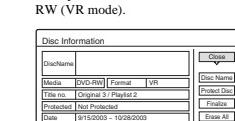
You can execute options effective for the entire disc using the Disc Information display.

- 1 Press **TOOLS** while the disc is in the recorder.

The TOOLS menu appears.

- 2 Select "Disc Info..." and press ENTER.

Example: When the inserted disc is a DVD-RW (VR mode).



- 3 Select an option, and press ENTER.

"Disc Name": Labels a disc. Enter the disc name in the "Input Disc Name" display (page 39).

"Protect Disc" (DVD-RW in VR mode only): Protects all titles on the disc. To cancel the protection, select "Don't Protect."

"Erase All" (DVD-RW/DVD+RW only): Erases all titles on the disc (except the protected titles).

"Format" (DVD-RW/DVD+RW only): Erases all contents of the disc to make a blank disc. For DVD-RWs, select a recording format (VR or Video) according to your needs.

Hints

- You can set protection for individual titles (page 62).
- By reformatting, you can change the recording format on DVD-RWs, or record again on DVD-RWs (Video mode) that have been finalized.

Note

You can enter up to 64 characters for a disc name. The disc name may not appear when the disc is played on other DVD equipment.

34

→continued 35

Finalizing a disc (preparing a disc for playback on other equipment)

+RW -RWVR +RWVideo +R -R

Finalizing is necessary when you play discs recorded with this recorder on other DVD equipment.

When you finalize a DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R, a DVD menu will be automatically created, which can be displayed on other DVD equipment.

Before finalizing, check the differences between the disc types in the table below.

Differences between the disc types

+RW Discs are automatically finalized when removed from the recorder. However, you may need to finalize the disc for certain DVD equipment, or if the recording time is short. You can edit or record on the disc even after finalizing.

-RWVR Finalizing is unnecessary when playing a disc on VR format compatible equipment. Even if your other DVD equipment is VR format compatible, you may need to finalize the disc, especially if the recording time is short. You can edit or record on the disc even after finalizing.

+RWVideo Finalizing is necessary when playing on any equipment other than this recorder. After finalizing, you cannot edit or record on the disc. If you want to record on it again, reformat the disc (page 35). However, all recorded contents will be erased.

+R Finalizing is necessary when playing on any equipment other than this recorder. After finalizing, you cannot edit or record on the disc.

1 Press TOOLS while the disc is in the recorder.

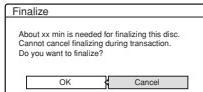
The TOOLS menu appears.

2 Select "Disc Info.," and press ENTER.

The Disc Information display appears.

3 Select "Finalize," and press ENTER.

The display shows the approximate time required for finalizing and asks for confirmation.



4 Select "OK," and press ENTER.

The recorder starts finalizing the disc.

To unfinalize a DVD-RW (VR mode)

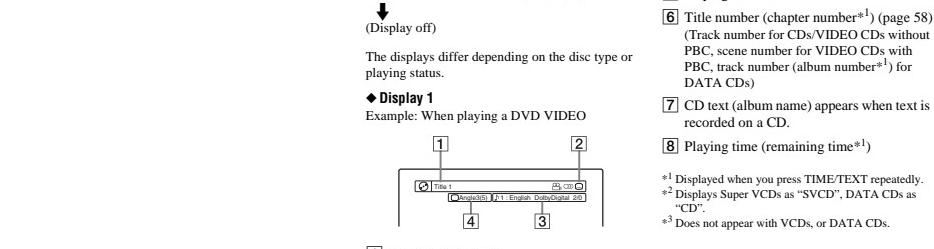
If you cannot record or edit on a DVD-RW (VR mode) that has been finalized with other DVD equipment (a message appears), unfinalize the disc by selecting "Unfinalize" in step 3 above.

Hint

You can check whether the disc has been finalized or not. If you cannot select "Finalize" in step 3 above, the disc has already been finalized.

Notes

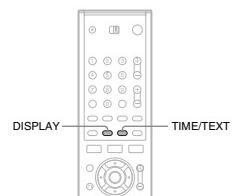
- Depending on the condition of the disc, recording, or the DVD equipment, discs may not play even if the discs are finalized.
- The recorder may not be able to finalize the disc if it was recorded on another recorder.



Checking the Play Information and Playing Time

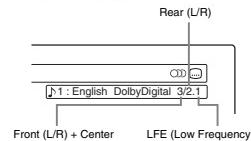
+RW -RWVR +RWVideo +R -R DVD VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the disc name recorded on the disc.



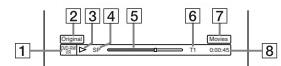
- Available functions for DVD VIDEOS (angle/audio/subtitle, etc.)
- The current selected function or audio setting (appears only temporarily)
- The current selected angle
- The current selected angle

Example: Dolby Digital 5.1 ch



◆ Display 2

Example: When playing a DVD-RW (VR mode)



[1] Disc type/format (page 8)

[2] Title type (Original or Playlist) (page 61)

[3] Play mode

[4] Recording mode (page 40)

[5] Playing status bar*³

[6] Title number (chapter number*) (page 58)
(Track number for CDs/VIDEO CDs without PBC, scene number for VIDEO CDs with PBC, track number (album number*) for DATA CDs)

[7] CD text (album name) appears when text is recorded on a CD.

[8] Playing time (remaining time*)

*1 Displayed when you press TIME/TEXT repeatedly.

*2 Displays Super VCDs as "SVCD", DATA CDs as "CD".

*3 Does not appear with VCDs, or DATA CDs.

Hints

- If "DTS" is set to "Off" in Audio Setup, the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 77).
- When "Auto Display" is set to "On" (default) in Options Setup (page 80), playback information automatically appears when the recorder is turned on, etc.

Notes

- The recorder can only display the first level of a CD's text, such as the disc name.
- The letters or symbols that cannot be displayed are replaced with "*."

Checking the playing/remaining time

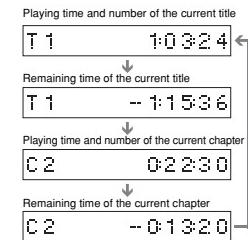
You can view the playing or time information displayed on the TV screen and the front panel display.

Press TIME/TEXT repeatedly.

The displays differ depending on the disc type or playing status.

Front panel display

Example: When playing a DVD



Example: When playing a CD

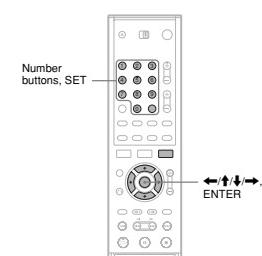
Track playing time and the current track/index number
↓
Remaining time of the current track
↓
Playing time of the disc
↓
Remaining time of the disc
↓
CD text (when available)

Notes

- The recorder can only display the first level of a CD's text, such as the disc name.
- The letters or symbols that cannot be displayed are replaced with "*."
- Playing time of MP3 audio tracks may not be displayed correctly.

How to Enter Characters

You can label a title, disc, or program by entering characters. You can enter up to 64 characters for a title or disc name, but the actual number of characters displayed in the menus such as the Title List will vary. When the display for entering characters appears, follow the steps below.



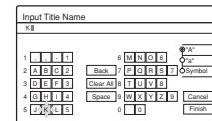
1 Press ←/↑/↓/→ to move the cursor to the right of the screen and select "A" (upper-case), "a" (lower-case), or "Symbol," and press ENTER.

The characters of the selected type are displayed.

2 Press ←/↑/↓/→ to select the character you want to enter, and press ENTER.

The selected character appears at the top of the display.

Example: Input Title Name



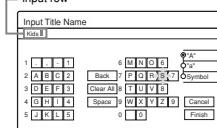
The type of characters will change according to the language you select in Easy Setup. Some languages allow you to enter an accent mark.

To enter a letter with an accent mark, select an accent followed by the letter.
Example: Select "á" and then "a" to enter "á."

To insert a space, select "Space."

3 Repeat steps 1 and 2 to enter the remaining characters.

Input row



To erase a character, move the cursor to the right of the character at the input row. Select "Back" and press ENTER.

To insert a character, move the cursor to the right of the point where you want to insert the character. Select the character and press ENTER.

To erase all of the characters, select "Clear All" and press ENTER.

4 Select "Finish," and press ENTER.

To cancel the setting, select "Cancel."

To use the number buttons

You can also use the number buttons to enter characters.

1 In step 2 above, press the number buttons repeatedly to select a character.
Example:

Press the number 3 button once to enter "D."
Press the number 3 button three times to enter "F."

2 Press SET and select the next character.

3 Select "Finish" and press ENTER.

Recording

Before Recording

Before you start recording...

- This recorder can record on various discs. Select the disc type according to your needs (page 8).
- Check that the disc has enough available space for the recording (page 34). For DVD+RWs and DVD-RWs, you can free up disc space by erasing titles (page 64).
- Adjust the recording picture quality and picture size if necessary (page 48).

Hint

Timer recordings will be made regardless whether or not the recorder is turned on. You can turn off the recorder without affecting the recording even after recording starts.

Recording mode

Like the SP or LP recording mode of VCRs, this recorder has six different recording modes. Select a recording mode according to the time and picture quality you need. For example, if picture quality is your top priority, select the High Quality mode (HQ). If recording time is your priority, Super Long Play mode (SLP) can be a possible choice. Note that the recording time in the following table is an approximate guide. Press REC MODE repeatedly to switch the recording modes.

I want to record with the best possible picture quality, so I'll select HQ.



Recording mode	Recording time (minute)
HQ (High quality)	60
HSP ↑	90
SP (Standard mode)	120
LP ↓	180
EP ↓	240
SLP (Long duration)	360

Note

Situations below may cause slight inaccuracies with the recording time.

- Recording a program with poor reception, or a program or video source of low picture quality
- Recording on a disc that has already been edited
- Recording only a still picture or just sound

Recording a stereo/SAP program

The recorder can receive and record stereo/SAP programs.

Stereo programs

When a stereo program is received, the "STEREO" indicator lights up on the front panel display. If there is noise in the stereo program, set "Auto Stereo" in Audio Setup to "Off" (page 76). The sound will be recorded in monaural but with less noise.

SAP (Second Audio Program)

When a SAP (Second Audio Program) is received, the "SAP" indicator lights up on the front panel display. To record only SAP sound, set "Tuner Audio" in Audio Setup to "SAP" (page 76).

Hint

You can select the audio (main or SAP) while recording bilingual programs using the AUDIO button. This does not affect the recorded sound.

Unrecordable pictures

Pictures with copy protection cannot be recorded on this recorder.

When the recorder receives a copy guard signal, the recorder continues to record but only a blank, grey colored screen will be recorded.

- 1** Press ▲ OPEN/CLOSE, and place a recordable disc on the disc tray.



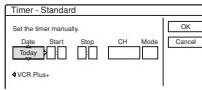
With the recording side facing down

- 2** Press ▲ OPEN/CLOSE to close the disc tray.

Wait until "LOAD" disappears from the front panel display.

Unused DVDs are formatted automatically.

- 3** Press [TIMER].



If the Timer programming (VCR Plus+) menu appears, press ← to switch the display to "Standard."

- 4** Select an item using ←/→ and adjust using ↑/↓.

"Date": Sets the date.

The item changes as follows.

Today ← Tomorrow ← ← Tue 10/28 (1 month later) ← Sun (every Sunday) ← ← Sat (every Saturday) ← Mon-Fri (Monday to Friday) ← Mon-Sat (Monday to Saturday) ← Sun-Sat (Sunday to Saturday) ← Today

"Start": Sets the start time.

"Stop": Sets the stop time.

"CH": Selects the channel or input source.

◆ When using the cable box/satellite box control

Turn on the cable box or satellite receiver and enter the channel number.

Example: When selecting 215ch
Select 2 and press → for the next digit. Select 1 and press →. Then select 5.

"Mode": Selects the recording mode (page 40). If you make a mistake, select the item and change the setting.

- 5** Select "OK," and press ENTER.

The Timer List menu (page 44) appears. The TIMER REC indicator lights up on the front panel and the recorder is ready to start recording.

Unlike a VCR, there is no need to turn off the recorder before the timer recording starts.

To stop recording during timer recording

Open the remote's cover and press ■ REC STOP. Note that it may take a few seconds for the recorder to stop recording.

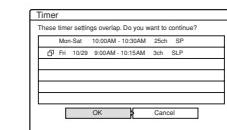
Rec Mode Adjust

If there is not enough available disc space for the recording, the recorder automatically adjusts the recording mode to enable the entire program to be recorded. This function is normally set to "On."

To cancel this function, press TOOLS while the Timer List is displayed. Select "Rec Mode Adjust" and press ENTER. Select "Off" and press ENTER.

If the timer settings overlap

Overlapped timer settings are shown as follows.



To store the setting as shown, select "OK." The program at the top of the list has priority over the rest of the programs.

To cancel the overlapped timer setting, select "Cancel."

To confirm, change, or cancel timer recording

See "Checking/Changing/Cancelling Timer Settings (Timer List)" (page 44).

Copy control signals

Copy-Free	+RW	+RWVR	+RW Video
Copy-Once	+R	-R	
Copy-Never	None (a blank screen is recorded)		

* The recorded disc can be played only on CPRM compatible equipment.

Timer Recording (Standard/VCR Plus+)

+RW +RWVR +RW Video +R -R

You can set the timer for a total of 30 programs, up to one month in advance.

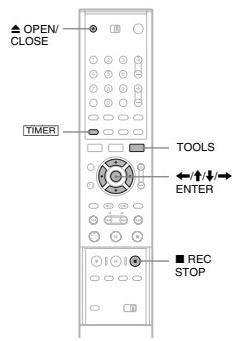
There are two methods to set the timer: the standard method and VCR Plus+ method.

- Standard: Set the date, time, and channel of the program manually.
- VCR Plus+: Enter the PlusCode number designated for each TV program (page 43).

Note

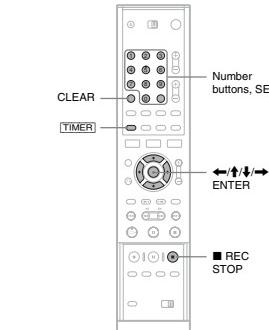
Do not operate your cable box or satellite receiver just before or during a timer recording. This may prevent the accurate recording of a program.

Setting the timer manually (Standard)



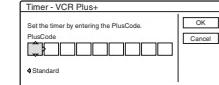
Recording TV programs using the VCR Plus+ system

The VCR Plus+ system is a feature that simplifies setting the timer. Just enter the PlusCode number listed in the TV program guide. The date, time, and channel of that program are set automatically. Before you start, check that the TV and guide channels are correctly set in "Set VCR Plus+ Channels" in "Settings" (page 71).



- 1** Insert a recordable disc.

- 2** Press [TIMER].



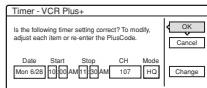
If the Timer programming (Standard) menu appears, press ← to switch the display to "VCR Plus+."

- 3** Press the number buttons to enter the PlusCode number, and press SET.

If you make a mistake, press CLEAR and re-enter the correct number.

4 Select "OK," and press ENTER.

The date, start and stop times, channel, and recording mode appear.



If you want to change the setting, press **⬅/➡** to select the item and press **↑/↓** to change the setting.

To re-enter the PlusCode number, select "Change."

5 Select "OK," and press ENTER.

The TIMER REC indicator lights up on the front panel, and the recorder is ready to start recording.

To stop recording during timer recording

Open the remote's cover and press **■ REC STOP**. Note that it may take a few seconds for the recorder to stop recording.

If the timer settings overlap

See page 41.

To extend the recording duration time while recording

See page 41.

To confirm, change, or cancel timer recording

See "Checking/Changing/Cancelling Timer Settings (Timer List)" (page 44).

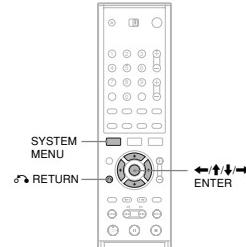
Hint

The Rec Mode Adjust function also works with this timer method (page 41).

Checking/Changing/ Canceling Timer Settings (Timer List)

+RW +RWVR +RWVideo +R -R

You can check, change, or cancel timer settings using the Timer List menu.



1 Press SYSTEM MENU.

The System Menu appears.

2 Select "TIMER LIST," and press ENTER.



Timer information displays the recording date, time, recording mode, etc.
"—" Indicates that the setting is overlapped by another setting.
"○" (green): Indicates that the setting is fully recordable.
"●" (red): Indicates the setting currently being recorded.
"■" (grey): Indicates that the setting cannot be recorded in the selected recording mode.

3 Select the timer setting you want to check/change/cancel, and press ENTER.

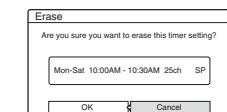
The sub-menu appears.

4 Select one of the options, and press ENTER.

"Modify": Changes the timer setting. Select an item using **⬅/➡** and adjust using **↑/↓**. Select "OK" and press ENTER.

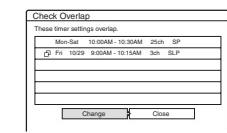


"Erase": Erases the timer setting. Select "OK" and press ENTER.



"Check Overlap": Checks for overlapped settings.

The timer setting set most recently is listed at the top and has priority over the other settings. You may not be able to record a program of lower priority.



To change the priority of a program, press **⬅/➡** to select "Change." For details, see "Changing the priority of overlapped settings" (page 46).

Select "Close" to return to the Timer List. To change or cancel the setting, repeat steps 3 and 4 above.

To turn off the Timer List

Press **⬅/➡ RETURN**.

Hint

While recording, you cannot modify the timer setting for the current recording, but you can extend the recording duration of the recording time (page 41).

Notes

- Even if the timer is set, timer recordings cannot be made while recording a program that has priority.
- Even if the timer is set for the same daily or weekly program, the timer recording cannot be made if it overlaps with a program that has priority. "■" will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.

Changing the priority of overlapped settings

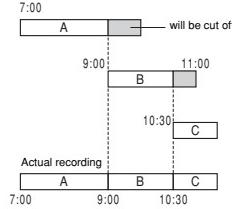
If the timer settings overlap, the program that was set last has priority and will be recorded. A timer recording of lower priority may be canceled, start from the middle or stop midway through the program.

You can change the priority of a program if necessary.

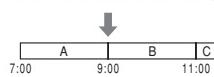
When the timer settings overlap

The program set last has priority.

Example: Set the timer in order of A, B, and C (setting C has first priority)

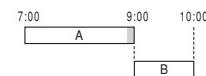


If you give setting B priority over setting C, all of program B will be recorded and program C is recorded only after program B has ended.



If the end time of one recording and the start time of another are the same

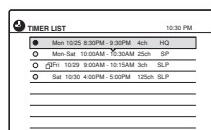
The end of program A will be cut.



1 Press SYSTEM MENU.

The System Menu appears.

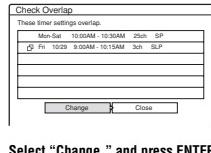
2 Select "TIMER LIST," and press ENTER.



3 Select an overlapped timer setting, and press ENTER.

■ indicates that the timer setting is overlapped by another timer setting.

4 Select "Check Overlap," and press ENTER.



5 Select "Change," and press ENTER.



6 Press **↑/↓** to change the timer setting's priority, and press ENTER.

The setting moves to its new location in the list. A timer setting higher up in the list has higher priority.

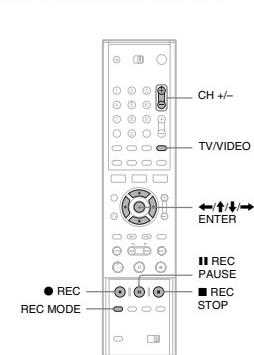
To return to the Timer List, select "Cancel."

Hint

You can change the priority of a timer setting while recording.

Recording Without the Timer

+RW +RWVR +RWVideo +R -R



1 Insert a recordable disc.

2 Press CH +/- to select the channel or input source you want to record.

3 Press REC MODE repeatedly to select the recording mode.

Each time you press the button, the display changes on the TV screen as follows:

HQ → HSP → SP → LP → EP → SLP

For more details about the recording mode, see page 40.

4 Press ● REC.

Recording starts.
Recording continues until you stop the recording or the disc is full.

To stop recording

Press **■ REC STOP** located beneath the remote control cover. Note that it may take a few seconds for recording to stop.

To pause recording

Press **■ REC PAUSE** located beneath the remote control cover. To restart recording, press the button again.

To watch another TV program while recording

Set your TV to the TV input using the TV/VIDEO button.

When you press the TV/VIDEO button, the TV/VIDEO indicator on the front panel lights up.

Press **● REC** repeatedly to set the recording mode.

Each press advances the time in 30 minute increments. The maximum duration is six hours.

0:30 → 1:00 → 1:30 → 2:00 → 2:30 → 3:00 → 3:30 → 4:00 → 4:30 → 5:00 → 5:30 → 6:00 → (normal recording)

The time counter decreases minute by minute to 0:00, then the recorder stops recording (power does not turn off). Even if you turn off the recorder during recording, the recorder continues to record until the time counter runs out.

To cancel the Quick Timer

Press **● REC** repeatedly until the counter appears in the front panel display. The recorder returns to normal recording mode.

Hint

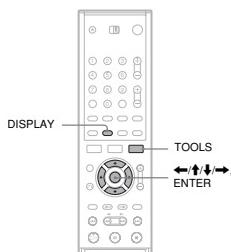
If you do not want to watch TV while recording, you can turn off the TV. When using a cable box, make sure to leave it on.

Notes

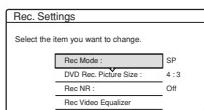
- After pressing **● REC**, it may take a short while to start recording.
- You cannot change the recording mode while recording or during recording pause.
- If there is a power failure, the program you are recording may be erased.
- You cannot watch a TV program while recording another TV program.

Adjusting the recording picture quality and size

You can adjust the recording picture quality and picture size.



- Before recording starts, press TOOLS and select "Rec Settings." Then press ENTER.



- Select the item you want to adjust, and press ENTER.

The adjustment display appears.

Example: Rec NR



"Rec Mode": Selects the recording mode for the desired recording time and picture quality. For more information, see "Recording mode" (page 40).

"DVD Rec. Picture Size": Sets the picture size of the program to be recorded.

- 4:3 (default): Sets the picture size to 4:3.
- 16:9: Sets the picture size to 16:9 (wide mode).

48

- Press TOOLS and select "Line Audio Input." Then press ENTER.

"Main/Sub": Records the two different sound tracks on DVD-RWs (VR mode). You can select either sound track when playing back the disc.

"Stereo" (default): Records stereo sound only. Select this for discs other than DVD-RWs (VR mode).

- Press **REC PAUSE** to set this recorder to record pause.

- Insert the source tape into the connected equipment and set to playback pause.

- At the same time, press **REC PAUSE** on this recorder and the pause or play button on the connected equipment.

Recording starts.

To stop recording, press **REC STOP** on this recorder.

Hint

You can adjust the settings for the recording picture before recording. See "Adjusting the recording picture quality and size" (page 48).

Notes

- When recording a video game image, the screen may not be clear.
- Any program that contains a Copy-Never copy guard signal cannot be recorded. The recorder continues to record, but a blank screen will be recorded.

This function works with DVD-Rs and DVD-RWs (Video mode) when the recording mode is set to HQ, HSP, or SP. For all other recording modes, the screen size is fixed at 4:3."

For DVD-RWs (VR mode), the actual picture size is recorded regardless of the setting. For example, if a 16:9 size picture is received, the disc records the picture as 16:9 even if "Rec Screen Size" is set to "4:3."

For DVD+RWs/DVD+Rs, the screen size is fixed at 4:3."

"Rec NR" (noise reduction): Reduces noise contained in the video signal.

"Rec Video Equalizer": Adjusts the picture in greater detail.

Press **ENTER** to select the item you want to adjust, then press **ENTER**.

- Contrast: Changes the contrast.

- Brightness: Changes the overall brightness.

- Color: Makes the colors deeper or lighter.

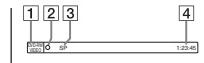
- Hue: changes the color balance.

Checking the disc status while recording

You can check the recording information such as recording time or disc type.

Press DISPLAY twice during recording.

The recording information appears.



[1] Disc type/format

[2] Recording status

[3] Recording mode

[4] Recording time

Press DISPLAY to turn off the display.

Creating chapters in a title

The recorder will automatically divide a recording (a title) into chapters by inserting chapter marks at 6 or 15 minute intervals during recording. Select the interval, "6Min" (default) or "15Min" in "Auto Chapter" of Features Setup (page 78).

Hint

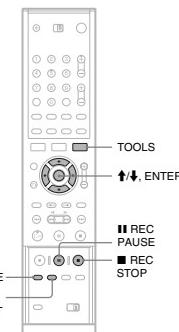
You can create chapters manually when playing DVD-RWs (VR mode). For details, see page 65.

Recording

Recording From a VCR or Similar Device

+RW -RWVR -RWVideo +R -R

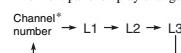
You can record from a connected VCR or similar device. To connect a VCR or similar device, see "Connecting a VCR or Similar Device" (page 29).



- Insert a recordable disc.

- Press INPUT SELECT to select an input source according to the connection you made.

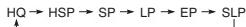
The front panel display changes as follows:



* Does not appear when "Set Top Box Control" is set to "On."

- Press REC MODE repeatedly to select the recording mode.

The recording mode changes as follows:



→continued 49

- Press TITLE LIST.

For details about the Title List, see "Using the Title List" (page 32).

Example: DVD-RW (VR mode)

TITLE LIST		ORIGINAL	My Movies	1/14 7:08
1	20th	1:00PM - 2:00PM	Wed 9/17	
2	5th	8:00PM - 9:00PM	Fri 9/17	
3	12th	9:00AM - 9:30AM	Sat 9/23	
4	19th	10:00AM - 10:30AM	Sun 9/24	
5	26th	8:00PM - 9:00PM	Mon 9/25	
6	L2	9:00PM - 9:30PM	Tue 10/1	
7	8th	9:00PM - 9:30PM	Tue 10/1	
8	15th	10:00AM - 10:30AM	Thu 10/2	

- Select the title, and press ENTER.

The sub-menu appears.

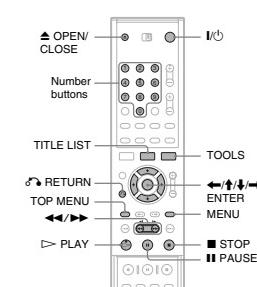
- Select "Play," and press ENTER.

Playback starts from the selected title on the disc.

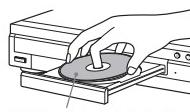
Playback

Playing

+RW -RWVR -RWVideo +R -R DVD
VCD CD DATA CD



- Press **OPEN/CLOSE**, and place a disc on the disc tray.



With the playback side facing down

- Press **OPEN/CLOSE** to close the disc tray.

If you inserted a DVD VIDEO, VIDEO CD, CD, or DATA CD, press **PLAY**. Playback starts.

To use the DVD's Menu

When you play a DVD VIDEO, or a finalized DVD-RW, DVD-RW (Video mode), DVD+R, or DVD-R, you can display the disc's menu by pressing TOP MENU or MENU.

To play VIDEO CDs with PBC functions

PBC (Playback Control) allows you to play VIDEO CDs interactively using the menu on your TV screen.

When you start playing a VIDEO CD with PBC functions, the menu appears.

Select an item using the number buttons and press ENTER. Then follow the instructions in the menu (press **PLAY** when "Press SELECT" appears). The PBC function of Super VCDs does not work with this recorder. Super VCDs are played in continuous play mode only.

To stop playback

Press **STOP**.

To resume playback from the point where you stopped the disc (Resume Play)

When you press **PLAY** again after you stop the disc, the recorder resumes playback from the point where you pressed **STOP**.

To start from the beginning, press TOOLS, select "Play Beginning" and press ENTER. Playback starts from the beginning of the title/track/scene.

The point where you stopped playing is cleared when:

- you open the disc tray.
- you play another title.
- you switch the Title List menu to Original or Playlist (DVD-RW in VR mode only).
- you edit the title after stopping playback.
- you change the settings on the recorder.
- you turn off the recorder (VIDEO CD/CD/DATA CD only).
- you make a recording (except for DVD-RWs in VR mode).

To play restricted DVDs (Parental Control)

If you play a restricted DVD, the message "Do you want temporarily change parental control to 'off'?" appears on your TV screen.

- 1 Select "OK" and press ENTER.
The display for entering your password appears.
- 2 Enter your four digit password using the number buttons.
- 3 Press ENTER to select "OK."
The recorder starts playback.

To register or change the password, see "Parental Control (DVD VIDEO only)" (page 78).

To lock the disc tray (Child Lock)

You can lock the disc tray to prevent children from ejecting the disc.

When the recorder is in standby mode, press RETURN, ENTER, and then on the remote.

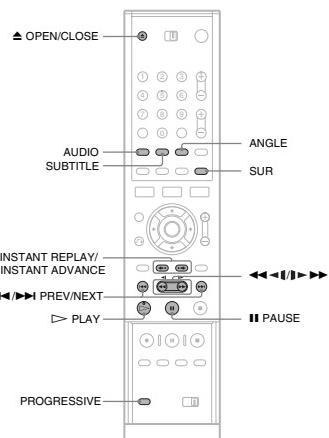
The recorder turns on and "LOCKED" appears on the front panel display. The button does not work while the Child Lock is set.

To unlock the disc tray, press RETURN, ENTER, and on the remote again when the recorder is in standby mode.

Hints

- You can also use the PLAY button in step 4 (page 51) to start playback.
- Even if a time recording starts during playback, neither the recording nor playback will stop (DVD-RWs/VR mode only). See page 57.
- Even if you select "Factory Setup" in Options Setup (page 80), the Child Lock remains set.

Playback options



Buttons	Operations	Discs
	Stops play and opens the disc tray.	All discs
AUDIO	Selects one of the audio tracks recorded on the disc when pressed repeatedly. Selects the language. Selects the main or secondary audio program (SAP). Selects stereo or monaural audio tracks.	
SUBTITLE	Selects a subtitle language when pressed repeatedly.	
ANGLE	Selects an angle when pressed repeatedly. If various angles (multi-angles) for a scene are recorded on the disc, appears in the front panel display.	

52

Adjusting the picture quality

+RW -RWVR +RWVideo +R -R DVD VCD

1 Press TOOLS during playback.

The TOOLS menu appears.

2 Select "Video Settings," and press ENTER.

The adjustment display appears.

"Y NR" (luminance noise reduction): Reduces noise contained in the luminance element of the video signal.

"C NR" (chroma noise reduction): Reduces noise contained in the color element of the video signal.

"BNR" (block noise reduction): Reduces "block noise" or mosaic like patterns in the picture.

"DVE" (digital video enhancer): Sharpens the outlines of the images.

"PB Video Equalizer" (Playback video equalizer): Adjusts the picture in greater detail.

Select an item and press ENTER.

• Contrast: changes the contrast.

• Brightness: changes the overall brightness.

• Color: makes the colors deeper or lighter.

• Hue: changes the color balance.

Buttons	Operations	Discs
SUR (surround)	Selects one of the TVS effects when pressed repeatedly. TVS* (TV Virtual Surround) lets you enjoy virtual surround sound effects created from the front left and right speakers. The selected setting is displayed in the front panel display for a few seconds. "TVS OFF": No surround effect "TVS DYNAMIC": Creates one set of virtual rear speakers. "TVS WIDE": Creates five sets of virtual rear speakers. "TVS NIGHT": Creates five sets of virtual rear speakers. Effective at low volume. "TVS STANDARD": Creates three sets of virtual rear speakers. Effective when you use two separate front speakers.	
PROGRESSIVE	Switches the type of video output signal to interlace or progressive format (page 17). 	
↔↔ INSTANT REPLAY/↔↔ INSTANT ADVANCE	Replays the scene/briefly fast forwards the scene. 	
↔↔ PREV/↔↔ NEXT	Goes to the beginning of the previous/next title/chapter/scene/track. All discs	
↔↔↔↔ (fast reverse/fast forward)	Fast reverses/fast forwards the disc when pressed during playback. Search speed changes as follows: fast reverse fast forward FR1 ← → FF1 FR2 ← → → FF2 FR3* ← → → → FF3* When you press and hold the button, fast forward/fast reverse continues at the selected speed until you release the button. All discs	
↔↔↔↔ (slow, freeze frame)	Plays in slow motion when pressed for more than one second in pause mode. Plays one frame at a time when pressed briefly in pause mode. *	
■ PAUSE	Pauses playback. All discs	

To resume normal playback, press PLAY.

4 Press \leftarrow/\rightarrow to adjust the setting, and press ENTER.

The default settings are underlined.

“Y NR”: (weak) Off 1 2 3 (strong)

“C NR”: (weak) Off 1 2 3 (strong)

“B NR”: (weak) Off 1 2 3 (strong)

“DVE”: (weak) Off 1 2 3 (strong)

“PB Video Equalizer”:

• Contrast: (weak) -3 ~ 0 ~ 3 (strong)

• Brightness: (dark) -3 ~ 0 ~ 3 (bright)

• Color: (light) -3 ~ 0 ~ 3 (deep)

• Hue: (red) -3 ~ 0 ~ 3 (green)

Repeat steps 3 and 4 to adjust any other items.

* “1” softens the outlines of the images, “2” enhances the outlines and “3” enhances them more than “2.”

Notes

- If the outlines of the images on your screen become blurred, set “BNR” to “Off.”
- Depending on the disc or the scene being played, the above BNR, Y NR, or C NR effects may be hard to discern. And, these functions may not work with some screen sizes.
- When playing a disc recorded in SLP recording mode, the BNR setting may have little effect.
- When using the DVE function, noise found in the disc may become more apparent. In this case, it is recommended that you use the BNR function with the DVE function. If the condition still does not improve, set the DVE level to “1” or “Off.”

Adjusting the sound quality



1 Press TOOLS during playback.

The TOOLS menu appears.

2 Select “Audio Settings,” and press ENTER.

3 Select an item, and press ENTER.

“Surround (TVS)” (DVD VIDEO only):
Selects one of the surround modes. For more information, see “Playback options” (page 53).

“Audio Filter” (all discs): Selects the digital filter to reduce noise above 22.05 kHz (Fs* is 44.1 kHz), 24 kHz (Fs is 48 kHz), or 48 kHz (Fs is above 96 kHz).
• Sharp (default): Provides a wide frequency range and spatial feeling.
• Slow: Provides smooth and warm sound.
* Sampling frequency of audio source

This function only adjusts the output signals from the LINE OUT (AUDIO L/R) 1/2 jacks.

4 Press $\leftarrow/\uparrow/\downarrow/\rightarrow$ to select the option, and press ENTER.

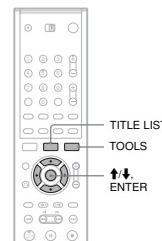
Note

There may be little effect by changing the Audio Filter depending on the disc or playback environment.

**Chasing Playback/
Simultaneous Rec and Play**



“Chasing Playback” allows you to view the beginning of a program while it is being recorded. “Simultaneous Rec and Play” allows you to view a previously recorded program while recording another on the same disc.



Playing a previous recording while making another

You can play a previously recorded program while recording another on the same disc. Playback continues even if the recording is a timer recording.

1 While recording, press TITLE LIST.

The Title List menu appears.

2 Select the title you want to play, and press ENTER.

The sub-menu appears.

3 Select “Play”, and press ENTER.

Playback starts from the selected title.

Playback

**Searching for a Title/
Chapter/Track, etc.**



You can search a DVD by title or chapter, and VIDEO CD/CD/DATA-CD by track or scene. As titles and tracks are assigned individual numbers on the disc, select the title or track by entering its number. You can also search for a scene using the time code.

3 Press the number buttons to select the number of the title, chapter, track, time code, etc., you want.

For example: Time Search

To find a scene at 2 hours, 10 minutes, and 20 seconds, enter “21020.”

If you make a mistake, press CLEAR to cancel the number, then select another number.

4 Press SET.

The recorder starts playback from the selected number.

1 Press TOOLS during playback.

The TOOLS menu appears.

2 Select a search method, and press ENTER.

“Title Search” (for DVDs)

“Chapter Search” (for DVDs)

“Track Search” (for CDs/DATA CDs)

“Search” (for VIDEO CDs)

“Album Search” (for DATA CDs)

“Time Search” (for DVDs): Searches for a starting point by entering the time code.

The display for entering the number appears.
Example: Title Search

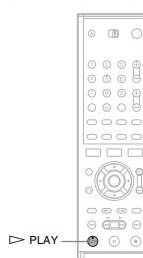


The number in parentheses indicates the total number of titles, tracks, etc.

Playing MP3 Audio Tracks



You can play MP3 audio tracks on DATA CDs (CD-ROMs/CD-Rs/CD-RWs).

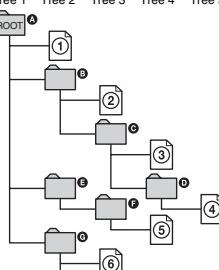


Playback order of MP3 audio tracks

Albums containing MP3 audio tracks play in the following order.

① → ② → ③ → ④ → ⑤ → ⑥. Albums that do not contain tracks (such as album ⑦) are skipped.

Tree 1 Tree 2 Tree 3 Tree 4 Tree 5



About MP3 audio tracks

MP3 is audio compression technology that satisfies certain ISO/MPEG regulations.

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format. However, the discs must be recorded according to ISO9660 Level 1, Level 2 or Joliet format for the recorder to recognize the tracks. You can also play discs recorded in Multi Session.

See the instructions supplied with the CD-R/CD-RW drives and the recording software (not supplied) for details on the recording format.

Note on Multi Session discs

If MP3 audio tracks are recorded in the first session, the recorder will also play MP3 audio tracks in other sessions. If audio tracks in Music CD format are recorded in the first session, only the first session will be played back.

When you insert a DATA CD and press \triangleright PLAY, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: ③ contains ④ so ④ is played before ⑤.)

Hints

• You can view the disc information while playing MP3 audio tracks (page 38).

• If you add numbers (01, 02, 03, etc.) to the front of the track names when you store the tracks in a disc, the tracks will be played in that order.

• Since a disc with many trees takes longer to start playback, it is recommended that you create albums with no more than two trees.

Playback

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the above illustration.
- Proceeding to the next or another album may take some time.
- The recorder may not be able to play some DATA CDs created in the Packet Write format.
- The recorder will play any data with the extension ".MP3," even if they are not in MP3 format. Playing this data may generate a loud noise which could damage your speaker system.
- The recorder does not conform to audio tracks in MP3PRO format.
- The playback order above may not be applicable if there are more than a total of 999 albums and tracks in the DATA CD.
- The recorder can recognize up to 499 albums (the recorder will count just albums, including albums that do not contain MP3 audio tracks). The recorder will not play any albums beyond the first 499 albums. Of the first 499 albums, the recorder will play no more than a combined total of 999 albums and tracks.
- The recorder can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- ID3 tags cannot be displayed.
- Only alphabet and numbers can be used for album or track names. Anything else is displayed as an asterisk.

Editing

Before Editing

This recorder offers various edit options for various disc types. Before you edit, check the disc type in the front panel display, and select the option available for your disc (page 8).

Note

You may lose the edited contents if you remove the disc or a timer recording starts while editing.

Edit options for DVD+RWs/DVD-RWs (Video mode)/DVD+Rs/DVD-Rs

+RW -RWVR +R -R

You can perform simple edits. Since Video mode titles are actual recordings on the disc, you cannot undo any edits you make. The edit functions available for Video mode titles are:

- Setting protection against erasure (page 62).
- Labeling a title (page 62).
- Erasing a title (page 62).
- Erasing multiple titles (page 63).
- Erasing a section of a title (A-B Erase) (DVD+RWs only) (page 63).
- Erasing titles to open up disc space (Disc Map) (DVD-RWs in Video mode and DVD+RWs only) (page 64).

Notes

- Once the disc is finalized, you cannot edit or record on the disc (except for DVD-RWs (VR mode) and DVD+RWs).
- You cannot create a Playlist (see below).
- If a message appears and indicates that the disc's control information is full, erase unnecessary titles.

Edit options for DVD-RWs (VR mode)

-RWVR

You can enjoy advanced edit functions. First you have two options for a DVD-RW (VR mode): editing either the original recording (called the "original"), or the playback information created from the original (called a "Playlist"). Since each is different in nature and offers different merits, read the following and select the one that better suits your needs.

To edit original titles

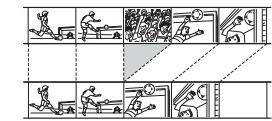
Edits made to the original titles are final. If you plan to retain an unaltered original recording, create and edit a Playlist (see below). The edit functions available for original titles are:

- Labeling a title (page 62).
- Setting protection against erasure (page 62).
- Erasing a title (page 62).
- Erasing multiple titles (page 63).
- Erasing a section of a title (A-B Erase) (DVD+RWs only) (page 63).
- Erasing titles to open up disc space (Disc Map) (DVD-RWs in Video mode and DVD+RWs only) (page 64).

To create and edit Playlist titles

A Playlist is a group of Playlist titles created from the original title for editing purposes. When you create a Playlist, only the control information necessary for playback, such as the playback order, is stored on the disc. Since the original titles are left unaltered, Playlist titles can be re-edited.

Example: You have recorded the final few matches of a soccer tournament on a DVD-RW (VR mode). You want to create a digest with the goal scenes and other highlights, but you also want to keep the original recording.



In this case, you can compile highlight scenes as a Playlist title. You can even rearrange the scene order within the Playlist title ("Creating and Editing a Playlist" on page 65).

The advanced edit functions available for Playlist titles are:

- Labeling a title (page 62).
- Erasing a title (page 62).
- Erasing multiple titles (page 63).
- Erasing a section of a title (A-B Erase) (page 63).
- Rearranging the title order (page 67).
- Dividing a title into multiple titles (page 67).
- Combining multiple titles into one title (page 68).

Hint

You can display the disc's Playlist titles in the Title List (Playlist), or the original titles in the Title List (Original). To switch the two Title Lists, press TOOLS while a Title List is displayed, and select "Original" or "Playlist."

Notes

- The Playlist title calls up data from the original titles for playback. When an original title is used for a Playlist title, the original title cannot be erased.
- You cannot protect Playlist titles.
- If a message appears and indicates that the disc's control information is full, erase unnecessary titles.

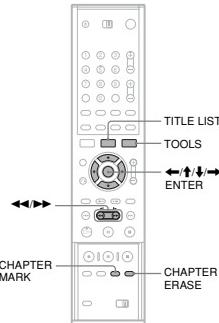
Editing a Title

+RW -RWVR +R -R

This section explains the basic edit functions. Note that editing is irreversible. To edit a DVD-RW (VR mode) without changing the original recordings, create a Playlist title (page 84).

Note

When editing a DVD+R, DVD-R, or DVD-RW (Video mode), finish all editing before finalizing the disc. You cannot edit a finalized disc.



1 Press TITLE LIST.

When editing a DVD-RW in VR mode, press TOOLS and select "Original" or "Playlist" from the TOOLS menu to switch the Title Lists, if necessary.

2 Selected a title, and press ENTER.

The sub-menu appears.

3 Select an option, and press ENTER.

You can make the following edits to the title.

- "Erase": Erases the selected title. Select "OK" when asked for confirmation. When the title is protected, the display asks for confirmation. To erase, select "Change," and when the Protection display appears, select "Off."

"Protect Title": Protects the title. Select "On" when the Protection display appears. "Off" appears next to the protected title. To cancel the protection, select "Off."

"Title Name": Allows you to enter or re-enter a title name (page 39).

"Set Thumbnail": Changes the title's thumbnail picture that appears in the Title List (page 32).

"A-B Erase": Erases a section of the title (see below).

Hints

- You can erase multiple titles at one time (page 63), or erase all of the titles on the disc at once (page 35).
- You can label or re-label DVDs (page 35).

Note

You cannot protect Playlist titles.

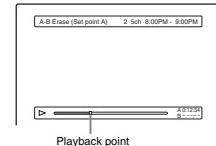
Erasing a section of a title (A-B Erase)

+RW -RWVR

You can select a section (scene) in a title and erase it. Note that erasing scenes in a title cannot be undone.

1 After step 2 of "Editing a Title," select "A-B Erase" and press ENTER.

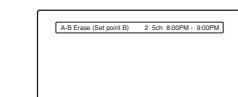
The display for setting point A appears.



When the title is protected, the display asks for confirmation. To continue, select "Change," and when the protection display appears, select "Off."

2 Select point A by pressing <>/>, and press ENTER.

The display for setting point B appears.



3 Select point B by pressing <>/>, and press ENTER.

The display asks for confirmation. To reset either point A or B, select "Change A" or "Change B," and go to step 2 or 3.

4 Select "OK," and press ENTER.

The scene is erased, and the display asks whether to erase another scene. To continue, select "Yes," and repeat from step 2. To finish, select "No."

Hint

A chapter mark is inserted after the scene was erased. The chapter mark divides the title into separate chapters on either side of the mark.

Notes

- Images or sound may be momentarily interrupted at the point where you erase a section of a title.
- Sections shorter than five seconds may not be erased.
- For DVD+RWs, the erased section may be slightly different from the points you selected.

Erasing multiple titles (Erase Titles)

+RW -RWVR +R -R

You can select and erase two or more titles at one time using the TOOLS menu.

1 Press TITLE LIST to turn on the Title List menu, and press TOOLS.

The TOOLS menu appears.

2 Select "Erase Titles," and press ENTER.

The display for selecting titles to be erased appears.

Combining multiple Playlist titles (Combine Titles)

-RWVR

- 1 Press TITLE LIST to turn on the Title List (Playlist) menu.**

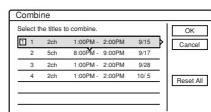
If the Title List (Original) menu appears, press TOOLS and select "Playlist."

- 2 Press TOOLS to select "Combine Titles," and press ENTER.**

The display for selecting titles appears.

- 3 Select a title, and press ENTER.**

A number indicating the order in which you selected the title appears. To cancel the selection, press ENTER again.

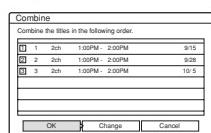


- 4 Repeat step 3 to select all of the titles you want to combine.**

To cancel all of the selections, select "Reset All."

- 5 Select "OK," and press ENTER.**

The list of titles to be combined appears. To change the selection, select "Change" and go to step 3.



- 6 Select "OK," and press ENTER.**

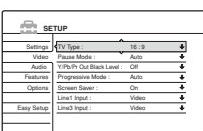
The display for selecting a title name from among the selected titles appears. To enter a new name, select "Enter Text," and follow the explanations on page 39.

- 7 Select a name, and press ENTER.**

The titles are combined.

68

- 5 Select an option, and press ENTER.**
The currently selected option is displayed next to the setup item.
Example: when "16:9" is set.



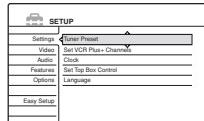
To turn off the display

Press SYSTEM MENU repeatedly.

Antenna Reception and Language Settings (Settings)

The Settings Setup helps you to make tuner, clock, and language settings for the recorder.

Select "Settings" in the Setup Display. To use the display, see "Using the Setup Displays" (page 69).



Tuner Preset

Notes

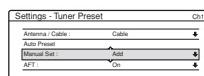
- You cannot preset channels for the connected cable box or satellite receiver.
- You cannot select "Tuner Preset" when you set "Set Top Box Control" to "On."

Auto Preset

Automatically presets the receivable channels. The recorder can receive VHF channels 2 to 13, UHF channels 14 to 69, and unscrambled CATV channels 1 to 125. First, we recommend that you preset the receivable channels in your area using automatic presetting methods.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 69) to select "Settings" in the Setup Display.**

- 2 Select "Tuner Preset," and press ENTER.**



Settings and Adjustments

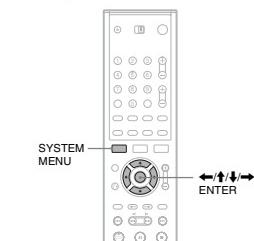
Using the Setup Displays

By using the Setup Displays, you can make various adjustments to items such as picture and sound, as well as select a language for the subtitles.

The Setup Displays are used in the following way.

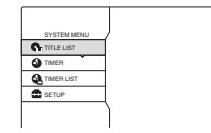
Note

Playback settings stored in the disc take priority over the Setup Display settings, and not all of the functions described may work.



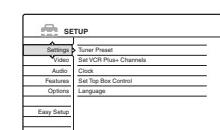
- 1 Press SYSTEM MENU while the recorder is in stop mode.**

The System Menu appears.



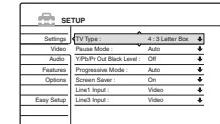
- 2 Select "SETUP," and press ENTER.**

The Setup Display appears.



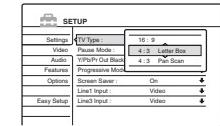
- 3 Select "Settings," "Video," "Audio," "Features," "Options," or "Easy Setup," and press ENTER.**

The selected Setup Display appears.
Example: "Video" setup



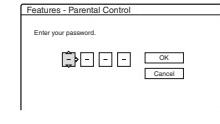
- 4 Select the item you want to set up, and press ENTER.**

Available options for the item appear.
Example: "TV Type"



Some items display a dialog box that provides further detailed settings.

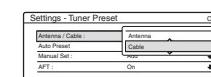
Example: The following dialog box appears when "Parental Control" in Features Setup is selected.



In this case, see "Parental Control" in "Recording and Parental Control Settings (Features)" (page 78).

→continued 69

- 3 Select "Antenna/Cable," and press ENTER.**

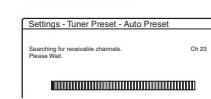


"Cable": Presets cable TV channels.

"Antenna": Presets VHF and UHF channels.

- 4 Select an option, and press ENTER.**

- 5 Select "Auto Preset," and press ENTER.**
All receivable channels are preset in numerical sequence.

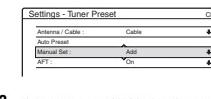


Manual Set

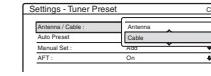
Presets or disables channels manually. If some channels could not be set using the Auto Preset or Easy Setup function, you can set them manually.

- 1 Follow steps 1 to 3 of "Using the Setup Displays" (page 69) to select "Settings" in the Setup Display.**

- 2 Select "Tuner Preset," and press ENTER.**



- 3 Select "Antenna/Cable," and press ENTER.**

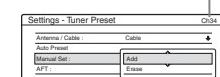


"Cable": Presets cable TV channels.

"Antenna": Presets VHF and UHF channels.

- 4 Select the channel you want to preset using the number buttons and the SET button.**
To disable a channel, select the channel using CH +/-.

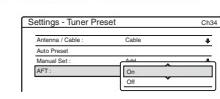
Channel to be preset/disabled



- 5 Select "Manual Set," and press ENTER.**
"Add": Presets the channel.
"Erase": Disables the channel.

- 6 Select "Add" to preset the channel, and press ENTER.**

- 7 Select "AFT" and press ENTER.**

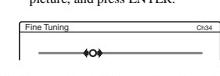


"On": Turns on the Auto Fine Tuning function. Normally, select this.

"Off": Allows you to adjust the picture manually.

- 8 Select "On" to turn on AFT, and press ENTER.**
To preset or disable another channel, repeat from step 3.

If the Auto Fine Tuning function does not work effectively, select "Off" in step 7 and press ENTER. When the fine tuning bar appears, press ←/→ to obtain a clearer picture, and press ENTER.



- 9 To preset or disable another channel, repeat steps 4 to 8.**

Set VCR Plus+ Channels

Sets up the guide channel number assigned to each channel.

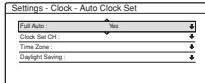
You need to set this correctly to make timer recordings with the VCR Plus+ function. For details, see page 27.

Clock

Auto (Auto Clock Set)

TURNS ON THE AUTO CLOCK SET FUNCTION WHEN A CHANNEL IN YOUR LOCAL AREA BROADCASTS A TIME SIGNAL.

- Follow steps 1 to 3 of "Using the Setup Displays" (page 69) to select "Settings" in the Setup Display.
- Select "Clock," and press ENTER.
- Select "Auto," and press ENTER.



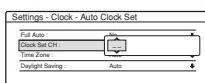
- Select "Full Auto," and press ENTER.
"Yes": Automatically sets your time zone and Daylight Saving Time (if applicable).
- "No": Allows you to adjust your time zone and Daylight Saving Time manually, without turning off the Auto Clock Set function.

- Select "Yes," and press ENTER.
The recorder automatically sets the clock by searching for a channel that carries a time signal and sets your time zone and Daylight Saving Time (if applicable).
- If the clock does not activate, your clock setting is incorrect. After repeating steps 1 to 4 above, select "No" in step 5 and press ENTER. Then select "Clock Set CH," "Time Zone," or "Daylight Saving" and press ENTER. Adjust these settings by pressing $\uparrow\downarrow$ and ENTER.

◆ Clock Set CH

Select a channel that carries a time signal using the number buttons.

Use this option if you know of a channel that carries a time signal. Most PBS member stations broadcast a time signal. For the fastest response select your local PBS station. Leave the setting at "-" to have the recorder automatically search for a channel that carries a time signal. To return to "-", enter "0."



◆ Time Zone

Select the time zone for your area, or select "Auto" to have the recorder automatically set your time zone.

The options are:
Auto \leftrightarrow Atlantic \leftrightarrow Eastern \leftrightarrow Central
 \leftrightarrow Mountain \leftrightarrow Pacific \leftrightarrow Alaska \leftrightarrow
Hawaii \leftrightarrow Auto

◆ Daylight Saving

Select "On" or "Off" (standard time), or select "Auto" to have the recorder automatically set the daylight saving time.

Hint

If you set "Full Auto" to "Yes," the Auto Clock Set function is activated whenever the recorder is turned off.

Note

If "Set Top Box Control" is set to "On," the channel on the cable box or satellite receiver changes when the recorder searches for a channel that carries a time signal and sets your time zone.

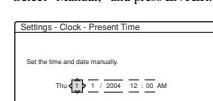
Manual (Manual Clock Set)

If the Auto Clock Set function did not set the clock correctly for your local area, set the clock manually.

- Follow steps 1 to 3 of "Using the Setup Displays" (page 69) to select "Settings" in the Setup Display.

- Select "Clock," and press ENTER.

- Select "Manual," and press ENTER.



- Press $\uparrow\downarrow$ to set the month, and press \rightarrow .
Set the day, year, hour, and minutes in sequence. Press $\leftarrow\rightarrow$ to select the item to be set, then press $\uparrow\downarrow$ to set the numbers. The day of the week is set automatically.

- Press ENTER to start the clock.

Hint

To change the numbers in step 4, press \leftarrow to return to the item to be changed, and select the numbers by pressing $\uparrow\downarrow$.

- Press $\uparrow\downarrow$ to set the month, and press \rightarrow .
Set the day, year, hour, and minutes in sequence. Press $\leftarrow\rightarrow$ to select the item to be set, then press $\uparrow\downarrow$ to set the numbers. The day of the week is set automatically.

- Press ENTER to start the clock.

◆ Clock

Selects a channel that carries a time signal using the number buttons.

◆ Manual

Selects the time and date manually.

◆ Set Top Box Control

You can control your cable box/satellite receiver using the supplied set top box controller. See "Step 7: Easy Setup" for details.

Set Top Box Control

You can control your cable box/satellite receiver using the supplied set top box controller. See "Using the cable box/satellite receiver control function" (page 12).

Set Top Box Control

On	TURNS ON THE CABLE BOX/SATELLITE RECEIVER CONTROL FUNCTION. SEE "USING THE CABLE BOX/SATELLITE RECEIVER CONTROL FUNCTION" (PAGE 12).
Off	NO CODE IS SENT WHEN SET IS PRESSED. NORMALLY SELECT THIS.
Mode 1	SENDS THE CHANNEL NUMBER YOU ENTERED.
Mode 2	SENDS THE CHANNEL NUMBER YOU ENTERED.

◆ Mode for SET button

Select "Mode 1" or "Mode 2" if your cable box or satellite receiver requires pressing an ENTER button or a SET button etc., after entering the channel number. If "Mode 1" does not work, try "Mode 2." If your cable box or satellite receiver does not respond to either setting, contact the manufacturer of the cable box or satellite receiver.

Language

OSD (On-Screen Display)

SWITCHES THE DISPLAY LANGUAGE ON THE SCREEN.

DVD Menu (DVD VIDEO only)

SWITCHES THE LANGUAGE FOR THE DVD MENU.

Audio (DVD VIDEO only)

SWITCHES THE LANGUAGE OF THE SOUND TRACK.
WHEN YOU SELECT "ORIGINAL," THE LANGUAGE GIVEN PRIOR TO THE DISC IS SELECTED.

Subtitle (DVD VIDEO only)

SWITCHES THE LANGUAGE OF THE SUBTITLES RECORDED ON THE DISC.
WHEN YOU SELECT "AUDIO FOLLOW," THE SUBTITLE LANGUAGE CHANGES ACCORDING TO THE LANGUAGE YOU SELECTED FOR THE SOUND TRACK.

Hint

IF YOU SELECT "OTHERS" IN "DVD MENU," "SUBTITLE," OR "AUDIO," SELECT AND ENTER A LANGUAGE CODE FROM "LANGUAGE CODE LIST" (PAGE 95) USING THE NUMBER BUTTONS.

Note

IF YOU SELECT A LANGUAGE IN "DVD MENU," "SUBTITLE," OR "AUDIO" THAT IS NOT RECORDED ON THE DVD VIDEO, ONE OF THE RECORDED LANGUAGES WILL BE AUTOMATICALLY SELECTED.

Video Settings (Video)

VIDEO SETTINGS WILL ADJUST ITEMS RELATED TO THE IMAGE, SUCH AS SIZE AND COLOR.

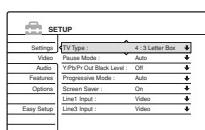
CHOOSE THE SETTINGS ACCORDING TO THE TYPE OF TV, TUNER, OR DECODER CONNECTED TO THE DVD RECORDER.

- PRESS SYSTEM MENU WHILE THE RECORDER IS IN STOP MODE.

- SELECT "SETUP," AND PRESS ENTER.

- SELECT "VIDEO," AND PRESS ENTER.

THE VIDEO SETUP APPEARS WITH THE FOLLOWING OPTIONS. THE DEFAULT SETTINGS ARE UNDERLINED.



TV Type

SELECTS THE ASPECT RATIO OF THE CONNECTED TV (4:3 STANDARD OR WIDE).

16:9	SELECT THIS WHEN CONNECTING TO A WIDE-SCREEN TV OR TV WITH A WIDE MODE FUNCTION.
4:3 Letter Box	SELECT THIS WHEN CONNECTING TO A 4:3 SCREEN TV. DISPLAYS A WIDE PICTURE WITH BANDS OF THE UPPER AND LOWER PORTIONS OF THE SCREEN.
4:3 Pan Scan	SELECT THIS WHEN CONNECTING TO A 4:3 SCREEN TV. AUTOMATICALLY DISPLAYS A WIDE PICTURE ON THE ENTIRE SCREEN AND CUTS OFF THE PORTIONS THAT DO NOT FIT.

16:9



4:3 Letter Box



4:3 Pan Scan



Note

DEPENDING ON THE DISC, "4:3 LETTER BOX" MAY BE SELECTED AUTOMATICALLY INSTEAD OF "4:3 PAN SCAN" OR VICE VERSA.

Pause Mode (DVD only)

SELECTS THE PICTURE QUALITY IN PAUSE MODE.

Auto	THE PICTURE, INCLUDING SUBJECTS THAT MOVE DYNAMICALLY, IS OUTPUT WITH NO JITTER. NORMALLY SELECT THIS POSITION.
Frame	THE PICTURE, INCLUDING SUBJECTS THAT DO NOT MOVE DYNAMICALLY, IS OUTPUT IN HIGH RESOLUTION.

Y/Pb/Pr Out Black Level

SELECTS THE BLACK LEVEL (SETUP LEVEL) FOR THE VIDEO SIGNALS OUTPUT FROM THE COMPONENT VIDEO OUT JACKS (PAGE 17).
THIS SETTING IS NOT EFFECTIVE WHEN THE PROGRESSIVE INDICATOR LIGHTS UP ON THE FRONT PANEL AND THE RECORDER OUTPUTS PROGRESSIVE SIGNALS.

On	Raises the standard black level. Select this when the picture appears too dark.
Off	Sets the black level of the output signal to the standard level. Normally, select this.

Progressive Mode

DVD SOFTWARE CAN BE DIVIDED INTO TWO TYPES: FILM-BASED SOFTWARE AND VIDEO-BASED SOFTWARE. VIDEO-BASED SOFTWARE IS DERIVED FROM TV, SUCH AS DRAMAS AND SIT-COMS, AND DISPLAYS IMAGES AT 30 FRAMES/60 FIELDS PER SECOND. FILM-BASED SOFTWARE IS DERIVED FROM FILM AND DISPLAYS IMAGES AT 24 FRAMES PER SECOND. SOME DVD SOFTWARE CONTAINS BOTH FILM AND FILM.

IN ORDER FOR THESE IMAGES TO APPEAR NATURAL ON YOUR SCREEN WHEN INPUT IN PROGRESSIVE MODE, THE PROGRESSIVE VIDEO SIGNAL NEEDS TO BE CONVERTED TO MATCH THE TYPE OF DVD SOFTWARE THAT YOU ARE WATCHING.

YOU CAN FINE-TUNE THE PROGRESSIVE 480P VIDEO SIGNALS THAT ARE OUTPUT WHEN YOU PRESS PROGRESSIVE ("PROGRESSIVE" LIGHTS UP). NOTE THAT YOU MUST CONNECT TO A PROGRESSIVE FORMAT TV USING THE COMPONENT VIDEO OUT JACKS (PAGE 17).

Auto	AUTOMATICALLY DETECTS THE SOFTWARE TYPE (FILM-BASED OR VIDEO-BASED) AND SELLECTS THE APPROPRIATE CONVERSION MODE. NORMALLY SELECT THIS POSITION.
Video	FIXES THE CONVERSION MODE TO THE MODE FOR VIDEO-BASED SOFTWARE.

Screen Saver

THE SCREEN SAVER IMAGE APPEARS WHEN YOU DO NOT USE THE RECORDER FOR MORE THAN 10 MINUTES WHILE THE POWER IS TURNED ON. THE SCREEN SAVER IMAGE HELPS PREVENT YOUR DISPLAY DEVICE FROM BECOMING DAMAGED (GHOSTING).

On	Turns on the screen saver function.
Off	Turns off the function.

Line1 Input

SELECTS A METHOD OF INPUTTING VIDEO SIGNALS FOR THE LINE IN 1 JACK ON THE REAR PANEL OF THE RECORDER.

Video	INPUTS VIDEO SIGNALS.
S Video	INPUTS S VIDEO SIGNALS.

Line3 Input

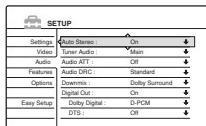
SELECTS THE METHOD OF INPUTTING VIDEO SIGNALS FOR THE LINE IN 3 JACK ON THE REAR PANEL OF THE RECORDER. THE PICTURES WILL NOT BE CLEAR IF THIS SETTING DOES NOT MATCH THE TYPE OF VIDEO INPUT SIGNAL.

Video	INPUTS VIDEO SIGNALS.
S Video	INPUTS S VIDEO SIGNALS.

Audio Settings (Audio)

The Audio Setup allows you to adjust the sound according to the playback and connection conditions.

- Press **SYSTEM MENU** while the recorder is in stop mode.
- Select "SETUP," and press **ENTER**.
- Select "Audio," and press **ENTER**.
The Audio Setup appears with the following options. The default settings are underlined.



Auto Stereo

This function is effective only when "Tuner Audio" is set to "Main."

On	Receives stereo programs. Normally select this.
Off	Select this to reduce noise. The sound changes to monaural.

Tuner Audio

Selects the sound to be recorded.

Main	Records only the main sound.
SAP	Records only the SAP (Second Audio Program) sound.

Note

If no SAP sound is received, the main sound is recorded regardless of the setting.

Audio ATT (attenuation)

If the playback sound is distorted, set this item to "On." The recorder reduces the audio output level. This function affects the output of the following jacks:

- LINE OUT (AUDIO L/R) 1/2 jacks

On	Select this when the playback sound from the speakers is distorted.
Off	Normally select this position.

Audio DRC (Dynamic Range Control) (DVDs only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "Audio DRC." This affects the output from the following jacks:

- LINE OUT (AUDIO L/R) 1/2 jacks

- DIGITAL OUT (OPTICAL or COAXIAL) jack only when "Dolby Digital" is set to "D-PCM" (page 77).

Standard	Normally select this position.
TV Mode	Makes low sounds clear even if you turn the volume down.
Wide Range	Gives you the feeling of being at a live performance.

Downmix (DVDs only)

Switches the method for mixing down to two channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see "Checking the Play Information and Playing Time" (page 37). This function affects the output of the following jacks:

- LINE OUT (AUDIO L/R) 1/2 jacks

- DIGITAL OUT (OPTICAL or COAXIAL) jack when "Dolby Digital" is set to "D-PCM" (page 77).

Dolby Surround	Normally select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
Normal	Multi-channel audio signals are downmixed to two channels for use with your stereo.

Digital Out

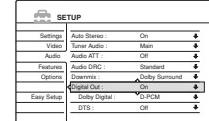
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jacks.

On	Normally select this position. When you select "On," see "To set the digital output signal" for further settings.
Off	The influence of the digital circuit upon the analog circuit is minimal.

◆ To set the digital output signal

The following setup items switch the method of outputting audio signals when you connect a component such as an amplifier (receiver) with a digital input jack.

For connection details, see "Connecting the Audio Cords" (page 18). Select "Dolby Digital" and "DTS" after setting "Digital Out" to "On."



If you connect a component that does not accept the selected audio signal, a loud noise (or no sound) will come out from the speakers, and may affect your ears or cause speaker damage.

- Dolby Digital (DVDs only)**
Selects the type of Dolby Digital signal.

D-PCM	Select this when the recorder is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "Downmix" item in Audio Setup (page 76).
Dolby Digital	Select this when the recorder is connected to an audio component with a built-in Dolby Digital decoder.

- DTS (DVD VIDEO only)**
Selects whether or not to output DTS signals.

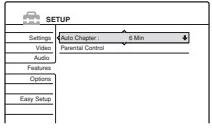
On	Select this when the recorder is connected to an audio component with a built-in DTS decoder.
Off	Select this when the recorder is connected to an audio component without a built-in DTS decoder.

Recording and Parental Control Settings (Features)

The Features Setup allows you to adjust recording and parental control settings.

- Press **SYSTEM MENU** while the recorder is in stop mode.
- Select "SETUP," and press **ENTER**.
- Select "Features," and press **ENTER**.

The Features Setup appears with the following options. The default settings are underlined.



Auto Chapter

Automatically divides a recording (a title) into chapters by inserting chapter markings at a specified interval. The markings are inserted while the recording is being made.

Off	No chapter mark is inserted.
6Min	Inserts chapter marks at approximately 6 minute intervals.
15Min	Inserts chapter marks at approximately 15 minute intervals.

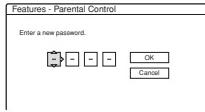
Note

Depending upon the size of the recording being made, the actual interval may vary from the interval selected in "Auto Chapter." The selected interval should only be used as an approximation to create chapters.

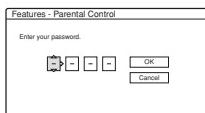
Parental Control (DVD VIDEO only)

Playback of some DVD VIDEOS can be limited according to a predetermined level, such as the age of the users. Scenes may be blocked or replaced with different scenes.

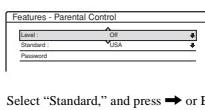
- After step 3 above, select "Parental Control," and press **ENTER**.
- If you have not entered a password, the display for registering a new password appears.



- When you have already registered a password, the display for entering the password appears.



- Enter your four-digit password using the number buttons, then select "OK" and press **ENTER**.



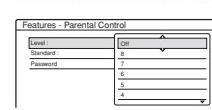
- Select "Standard," and press **→** or **ENTER**. The selection items for "Standard" are displayed.



- Select a geographic area as the playback limitation level, and press **ENTER**. The area is selected.

When you select "Others," press the number buttons to select and enter an area code in the table (see below). Then select "OK" and press **ENTER**.

- Select "Level," and press **ENTER**. The selection items for "Level" are displayed.



The lower the value, the stricter the limitation.

- Select the level, and press **ENTER**. The Parental Control setting is complete.

- To cancel the Parental Control setting for the disc, set "Level" to "Off" in step 6.

- To change the password, select "Password" in step 3, and press **ENTER**. When the display for registering a password appears, enter a new four-digit password using the number buttons, then select "OK" and press **ENTER**.

Notes

- If you forget your password, you will have to reset it by selecting "Parental Control" under "Factory Setup" in Options Setup (page 80).

- When you play discs which do not have the Parental Control function, playback cannot be limited on this recorder.

- Depending on the disc, you may be asked to change the Parental Control level while playing the disc. In this case, enter your password, then change the level.

◆ Area code

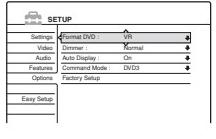
Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

Disc and Remote Control Settings/Factory Settings (Options)

The Options Setup allows you to set up other operational settings.

- 1 Press SYSTEM MENU while the recorder is in stop mode.
- 2 Select "SETUP," and press ENTER.
- 3 Select "Options," and press ENTER.

The Options Setup appears with the following options. The default settings are underlined.



Format DVD (DVD-RW only)

The recorder automatically starts formatting in VR mode or Video mode, whichever is selected below, when a new, unformatted DVD-RW is inserted.

<u>VR</u>	Automatically formats the disc in VR mode.
<u>Video</u>	Automatically formats the disc in Video mode.

Dimmer

Adjusts the lighting of the front panel display.

<u>Normal</u>	Bright lighting.
Power Save	Low lighting. Turns off the lighting when the power is off.

Auto Display

<u>On</u>	Automatically displays information on the screen when the recorder is turned on, etc.
Off	Displays information only when DISPLAY is pressed.

Command Mode

Changes the Command Mode of the recorder if other DVD equipment is assigned the same Command Mode. Be sure to match the Command Mode switch on the remote to the setting made here. For details, see "If you have a Sony DVD player or more than one Sony DVD recorder" on page 22.

<u>DVD1</u>	Select this if the default Command Mode conflicts with other DVD equipment.
<u>DVD2</u>	Select this if the default Command Mode conflicts with other DVD equipment.
<u>DVD3</u>	The default Command Mode of the recorder.

Factory Setup

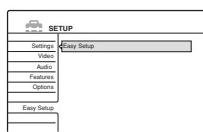
Allows you to select the setup settings by group, and return them to their default settings. Note that all of your previous settings will be lost.

- 1 After step 3 above, select "Factory Setup," and press → or ENTER. The display for selecting a group of settings appears.
- 2 Select the group of settings you want to return to default from "Settings," "Video," "Audio," "Features," "Options," "Parental Control," and "All," and press → or ENTER.
- 3 Select "Start," and press ENTER. The selected settings return to their default settings.
- 4 Press ENTER when "Finish" appears.

Easy Setup (Resetting the Recorder)

Select this to run the Easy Setup program.

- 1 Press SYSTEM MENU while the recorder is in stop mode.
- 2 Select "SETUP," and press ENTER.
- 3 Select "Easy Setup," and press ENTER.



- 4 Press ENTER.

- 5 Select "Start," and press ENTER.
- 6 Follow the instructions for Easy Setup (page 23) from step 5.

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the recorder, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power does not turn on.

- Check that the AC power cord is connected securely.

Picture

There is no picture.

- Re-connect all connecting cords securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 12).
- Switch the input selector on your TV (such as to "VCR") so that the signal from the recorder appears on the TV screen.

Picture noise appears.

- If the picture output signal from your recorder passes through your VCR to get to your TV, or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programs could affect picture quality. If you still experience this problem even when you connect your recorder directly to your TV, try connecting your recorder to your TV's S VIDEO input.
- You have set the recorder to progressive format (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, press PROGRESSIVE until the progressive indicator turns off. Even if your TV is compatible with progressive format (480p) signals, the image may be affected when you set the recorder to progressive format. In this case, press PROGRESSIVE so that the PROGRESSIVE indicator turns off and the recorder is set to normal (interlace) format.

TV program reception does not fill the screen.

- Set the channel manually in "Tuner Preset" in Settings Setup (page 70).
- Select the correct source using the INPUT SELECT button, or select a channel of any TV program using the CH +/- buttons.

TV program pictures are distorted.

- Reorient the TV antenna.
- Adjust the picture (see the TV's instruction manual).
- Place the recorder and TV farther apart.
- Place the TV and any bunched antenna cables farther apart.
- The RF cable is connected to the VHF/UHF OUT jack on the recorder. Connect the cable to the VHF/UHF IN jack.

The channel on the cable box/satellite receiver has been changed.

- The set top box controller is connected and "Set Top Box Control" is set to "On." Check the "Set Top Box Control" settings in Settings Setup (page 73).

TV channels cannot be changed.

- The channel is disabled (page 71).
- A timer recording started, which changed the channels.

The picture from equipment connected to the recorder's input jack does not appear on the screen.

- If the equipment is connected to the LINE 1 IN jack, select "L1" in the front panel display by pressing CH +/- or INPUT SELECT.
- If the equipment is connected to the LINE 2 IN jacks, select "L2" in the front panel display by pressing CH +/- or INPUT SELECT.
- If the equipment is connected to the LINE IN 3 jack, select "L3" in the front panel display by pressing CH +/- or INPUT SELECT.
- When an S video cable is connected to the recorder's LINE IN 1 or LINE IN 3 jack, set "Line1 Input" or "Line3 Input" in Video Setup to "S Video" (page 75).

The playback picture or TV program from the equipment connected through the recorder is distorted.

- If the playback picture output from a DVD player, VCR, or tuner goes through your recorder before reaching your TV, the copy-protection signal applied to some programs could affect picture quality. Disconnect the playback equipment in question and connect it directly to your TV.

The picture does not fill the screen.

- Set "TV Type" in Video Setup in accordance with the aspect ratio of your TV (page 74).

The picture does not fill the screen, even though the aspect ratio is set in "TV Type" in Video Setup.

- The aspect ratio of the disc is fixed on your DVD.

Sound

There is no sound.

- Re-connect all connections securely.
- The connecting cord is damaged.
- The input source setting on the amplifier or the connection to the amplifier is incorrect.
- The recorder is in reverse play, fast-forward, slow motion, or pause mode.
- If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jacks, check the Audio Setup settings (page 76).

Sound distortion occurs.

- Set "Audio ATT" in Audio Setup to "On" (page 76).

Sound is noisy.

- When playing a CD with DTS sound tracks, noise will come from the LINE OUT (AUDIO L/R) 1/2 jacks (page 55).

The sound volume is low

- The sound volume is low on some DVDs. The sound volume may improve if you set "Audio DRC" in Audio Setup to "TV Mode" (page 76).
- Set "Audio ATT" in Audio Setup to "Off" (page 76).

An alternate audio track cannot be recorded or played.

- Second Audio Program (SAP) is not available for all programs. The program you are recording does not have a second audio program.
- You have set "Tuner Audio" in Audio Settings to "Main" (page 76). Select "SAP" to record alternate audio programs.
- When recording from connected equipment, set "Line Audio Input" in TOOLS menu to "Main/Sub" (page 49).
- If you have connected an AV amplifier to the DIGITAL OUT (OPTICAL or COAXIAL) jack and want to change the audio track for a DVD-RW (VR mode) during playback, set "Dolby Digital" in Audio Setup to "D-PCM" (page 77).

Playback

The disc does not play.

- The disc is upside down. Insert the disc with the labeled side facing up.
- The disc is not correctly inserted.
- Moisture has condensed inside the recorder. Remove the disc and leave the recorder turned on for about half an hour until the moisture evaporates.
- If the disc was recorded on another recorder, the recorder cannot play the disc if it was not finalized (page 36).

The disc does not start playback from the beginning.

- Resume play was activated (page 51).
- You have inserted a disc whose Title menu or DVD menu automatically appears on the TV screen when it is first inserted. Use the menu to start playback.

The recorder starts playing the disc automatically.

- The DVD VIDEO features an auto playback function.

Playback stops automatically.

- If the disc has an auto pause signal, the recorder stops playback at the auto pause signal.

Some functions such as Stop, Search, or Slow-motion Play cannot be performed.

- Depending on the disc, you may not be able to do some of the operations above. See the instruction manual supplied with the disc.

The language for the sound track cannot be changed.

- Multilingual tracks are not recorded on the disc being played.
- The DVD VIDEO prohibits the changing of the language for the sound track.
- Try changing the language using the DVD VIDEO's menu.

The subtitle language cannot be changed or turned off.

- Multilingual subtitles are not recorded on the DVD VIDEO.
- The DVD VIDEO prohibits changing of the subtitles.
- Try changing the subtitle using the DVD VIDEO's menu.
- The subtitles cannot be changed for the titles recorded on this recorder.

The angles cannot be changed.

- Multi-angles are not recorded on the DVD VIDEO being played.
- You are trying to change the angles when "□" does not appear on the TV screen (page 53).
- The DVD VIDEO prohibits changing angles.
- Try changing the angle using the DVD VIDEO's menu.
- The angles cannot be changed for the titles recorded on this recorder.

The MP3 audio track does not play.

- The MP3 audio track is not recorded in a format that the recorder can play (page 59).

Recording/Timer recording/Editing**The channel cannot be changed from the channel you are recording.**

- Set the TV's input source to "TV."

Recording does not start immediately after you press REC.

- Operate the recorder only after "LOAD", "FORMAT," or "INFORWITE" disappears from the front panel display.

Nothing was recorded even though you set the timer setting correctly.

- There was a power failure during recording.
- The recorder's internal clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 72).
- The channel was disabled after the timer recording was set. (See "Manual Set" on page 71.)
- Disconnect the AC power cord from the AC outlet, and connect it again.
- The program contains copy protection signals that restrict copying.
- The timer setting overlapped another setting that was set later or has priority (page 46).
- There is no DVD inside the recorder.
- There is not enough disc space for the recording.
- The set top box was turned off.
- The set top box controller was incorrectly connected (page 13).
- The settings in "Set Top Box Control" in Settings Setup have been changed (page 73).

Recording does not stop immediately after you press REC STOP.

- It will take a few seconds for the recorder to input disc data before recording can stop.

Recording does not stop after you press REC STOP.

- Open the remote's cover and press REC STOP.

Timer recording is not complete or did not start from the beginning.

- There was a power failure during recording. If the power recovers when there is a timer recording, the recorder resumes recording. Should the power failure continue for more than 1 hour, reset the clock (page 72).
- The timer setting overlapped another setting that was set later or has priority (page 46).
- Disc space was not enough.

Contents previously recorded were erased.

- Data that has been recorded on a DVD with a PC will be erased from the disc when the disc is inserted.

Display**The clock has stopped.**

- Set the clock again (page 72).
- The clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 72).

The TIMER REC indicator is flashing.

- The disc does not have enough space.
- Insert a recordable disc inside the recorder.

The recording mode indication is incorrect.

- When the recording or dubbing is less than three minutes, the recording mode indication may be displayed incorrectly. The actual recording itself is correctly made in the selected recording mode.

The clock does not appear in the front panel display.

- "Dimmer" in Options Setup is set to "Power Save" (page 80).

Remote control**The remote does not function.**

- Batteries are weak.
- The remote is too far from the recorder.
- The remote's manufacturer code returned to the default setting when you replaced the batteries. Reset the code (page 20).
- Turn on the recorder.
- The remote is not pointed at the remote sensor on the recorder.
- Different command modes are set for the recorder and remote. Set the same command mode (page 22).
- Set the TV/DVD switch to DVD (page 21).

Other Sony equipment responds to the remote.

- The same command mode is set for both the equipment and recorder. Set a different command mode for the recorder (page 22).

Others**The recorder does not operate properly.**

- Restart the recorder. Press down $\text{I} \cup$ on the recorder for more than ten seconds until "WELCOME" appears in the front panel display.
- When static electricity, etc., causes the recorder to operate abnormally, turn off the recorder and wait until the clock appears in the front panel display. Then, unplug the recorder and after leaving it off for a while, plug it in again.

Five numbers or letters are displayed on the front panel display.

- The self-diagnosis function was activated (see the table on page 86).

The disc tray does not open after you press OPEN/CLOSE.

- It may take a few seconds for the disc tray to open after you have recorded or edited a disc. This is because the recorder is adding disc data to the disc.

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

- Contact your Sony dealer or local authorized Sony service facility.

→continued 85**"RECOVERY" appears in the front panel display.**

- The recorder's recovery function was activated when the recorder was turned on because the power was turned off or failed during recording. Leave the recorder on until "RECOVERY" disappears from the front panel display.

"FAN ERROR" appears in the front panel display.

- Check that the vent on the rear of the recorder is not blocked. Then, turn off the recorder, wait until the clock appears in the front panel display, and disconnect the AC power cord. Leave the recorder off for a while, then re-connect the power cord, and press $\text{I} \cup$ on the recorder.

The disc tray does not open and you cannot remove the disc after you press OPEN/CLOSE.

- Turn off the recorder. Once the clock appears in the front panel display, disconnect the AC power cord. Connect it again while pressing down $\text{I} \cup$ on the recorder, and release the button when the disc tray opens. Then, keep $\text{I} \cup$ on the recorder pressed for about ten seconds until "WELCOME" appears in the front panel display.

"LOCKED" appears in the front panel display.

- The disc tray is locked. Cancel the Child Lock (page 52).

**Self-diagnosis Function
(When letters/numbers appear in the display)**

When the self-diagnosis function is activated to prevent the recorder from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four numbers appears on the front panel display. In this case, check the following table.

First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. → Clean the disc with a soft cloth.
C 31	The disc is not inserted correctly. → Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the recorder has performed the self-diagnosis function. → Contact your nearest Sony dealer or local authorized Sony service facility and give the five-character service number. Example: E 61 10

Notes About This Recorder**On operation**

- If the recorder is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the recorder. Should this occur, the recorder may not operate properly. In this case, remove the disc and leave the recorder turned on for about half an hour until the moisture evaporates.
- When you move the recorder, take out any discs. If you don't, the disc may be damaged.

- After playing, store the disc in its case.

- Clean the disc with a cleaning cloth. Wipe the disc from the center out.



- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

- Do not use the following discs.
 - A disc that has a non-standard shape (e.g., card, heart).
 - A disc with a label or sticker on it.
 - A disc that has cellophane tape or sticker adhesive on it.

On adjusting volume

- Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

- Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

On cleaning discs

- Do not use a commercially available cleaning disc. It may cause a malfunction.

Notes about the discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface. Dust, fingerprints, or scratches on the disc may cause it to malfunction.



- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.

Specifications

System

Laser: Semiconductor laser

Channel coverage:

NTSC

VHF: 2 to 13/UHF: 14 to 69/CATV: A-8 to A-1, A to W, W+1 to W+4

Video reception: Frequency synthesizer system

Audio reception: Split carrier system

Antenna: 75-ohm antenna terminal for VHF/UHF

Timer: Clock; Quartz locked/Timer indication: 12-hour cycle (digital)/Power back-up duration: 1 hour

Video recording format: MPEG Video

Audio recording format/applicable bit rate: Dolby Digital/2 ch, 256 kbps

When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Inputs

(Jack name: Jack type/input level/input impedance)

LINE IN 1/2/3

(AUDIO): Phono jack/2 Vrms/more than 22 kilohms

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.286 Vp-p

Outputs

(Jack name: Jack type/output level/output impedance)

LINE OUT 1/2

(AUDIO): Phono jack/2 Vrms/10 kilohms

(VIDEO): Phono jack/1.0 Vp-p

(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.286 Vp-p

DIGITAL OUT (OPTICAL):

Optical output jack/-18 dBm (wave length: 660 nm)

DIGITAL OUT (COAXIAL):

Phono jack/0.5 Vp-p/75 ohms

COMPONENT VIDEO OUT (Y, Pb, Ps):

Phono jack/Y: 1.0 Vp-p/Ps, Pb: interface*=0.648 Vp-p, progressive or interface**=0.7 Vp-p

* "Y/Pb/Ps Out Black Level" is "On"

** "Y/Pb/Ps Out Black Level" is "Off"

SET TOP BOX CONTROL:

Mini jack

General

Power requirements: 120 V AC, 60 Hz

Power consumption: 37 W

Dimensions (approx.): 430 × 85 × 345 mm
(17 × 3 3/8 × 13 5/8 in.) (width/height/depth)

incl. projecting parts

Mass (approx.): 4.8 kg (10.58 lb)

Operating temperature: 5 °C to 35 °C

(41 °F to 95 °F)

Operating humidity: 25 % to 80 %

Supplied accessories:

Audio/video cord (1)

Power cord (1)

Antenna cable (1)

Set top box controller (1)

Remote commander (remote) (1)

Size AA(R6) batteries (2)

Specifications and design are subject to change without notice.

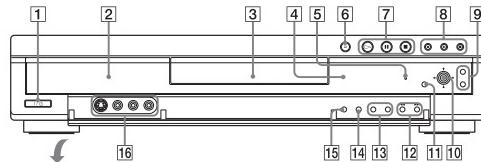
Additional Information

Guide to Parts and Controls

For more information, see the pages in parentheses.

Front panel

Buttons on the recorder have the same function as the buttons on the remote if they have the same similar names.



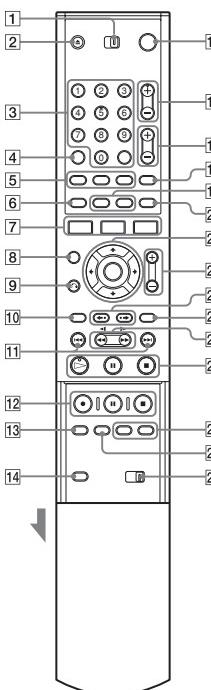
- | | |
|----------------------------------|---|
| [1] I/O (on/standby) button (23) | [9] SYSTEM MENU button (31) |
| [2] Front panel display (38, 92) | TOOLS button (32) |
| [3] Disc tray (41) | [10] ↗/↑/↗/↓/←/ENTER button (31) |
| [4] (remote sensor) (20) | [11] ⌂ RETURN button (32) |
| [5] TIMER REC indicator (41) | [12] ▲/▼/◀/▶ (previous/next) buttons (53) |
| [6] △ (open/close) button (41) | [13] CHANNEL +/- buttons (47) |
| [7] ▶ (play) button (51) | [14] INPUT SELECT button (47, 49, 71) |
| [8] ■ (pause) button (51) | [15] REC MODE button (40) |
| [16] REC button (47) | [16] LINE 2 IN (S VIDEO/VIDEO/AUDIO L/R) jacks (30) |
| [17] REC PAUSE button (47) | |
| [18] REC STOP button (47) | |

→continued 89

88

Remote

Buttons on the remote have the same function as the buttons on the recorder if they have the same or similar names. Buttons with an orange dot next to them can be used with your TV when the TV/DVD switch is set to TV.



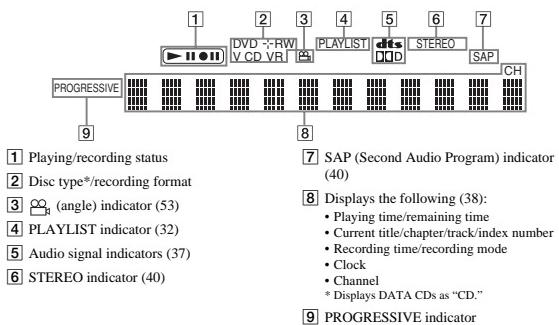
- | | |
|--|--|
| [1] TV/DVD switch (21) | [26] ▶ (PLAY) button* (51) |
| [2] △ OPEN/CLOSE button (41) | The button has a tactile dot.
■ PAUSE button (51)
■ STOP button (51) |
| [3] Number buttons (21, 43)* | [27] CHAPTER MARK/ERASE buttons (65) |
| SET button (21, 43)* | [28] INPUT SELECT button (49, 71) |
| The number 5 button has a tactile dot. | [29] COMMAND MODE switch (DVD 1,2,3) (22) |
| [4] CLEAR button (43) | |
| [5] AUDIO button (53)* | |
| SUBTITLE button (53) | |
| ANGLE button (53) | |
| [6] ⌂ (TIMER) button (41, 43) | |
| [7] SYSTEM MENU button (31) | |
| TITLE LIST button (32, 51, 62) | |
| TOOLS button (32) | |
| [8] CURSOR MODE button (32) | |
| [9] ⌂ RETURN button (32) | |
| [10] TOP MENU button (51) | |
| [11] ▲/▼ PREV (previous)/▶/NEXT buttons (53) | |
| [12] ● REC button (47) | |
| ■ REC PAUSE button (47) | |
| ■ REC STOP button (47) | |
| [13] REC MODE button (40) | |
| [14] PROGRESSIVE button (17) | |
| [15] I/O (on/standby) button (23) | |
| [16] CH (channel) +/- buttons (21) | |
| The + button has a tactile dot. | |
| [17] VOL (volume) +/- buttons (21) | |
| [18] TV/VIDEO button (21) | |
| [19] DISPLAY button (37, 49) | |
| TIME/TEXT button (38) | |
| [20] SUR (surround) button (53) | |
| [21] ↗/↑/↗/↓/←/ENTER button (31) | |
| [22] ZOOM +/- buttons (32) | |
| [23] ⌂ INSTANT REPLAY/● INSTANT ADVANCE buttons (53) | |
| [24] MENU button (51) | |
| [25] ▲/▼/◀/▶ (search) buttons (53) | |

* Use the tactile dot as a reference when operating the recorder.

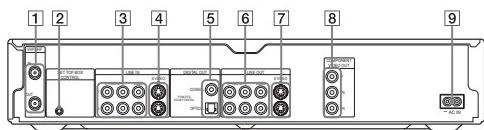
Additional Information

90

→continued 91

Front panel display**Hint**

You can turn off the front panel display when the recorder is turned off by setting "Dimmer" to "Power Save" in Options Setup (page 80).

Rear panel**Interlace format (page 17)**

Interlace format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

Original (page 61)

Titles actually recorded on a DVD-RW (VR mode). Erasing original titles frees up disc space.

Playlist (page 61)

Playback information created from the actual recordings on a DVD-RW (VR mode). A Playlist leaves the original titles as they are, and contains only the information needed to control playback. A Playlist title takes up very little disc space.

Progressive format (page 17)

Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames/60 fields in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper.

Title (page 58)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 58)

Sections of a music feature on a CD (the length of a song).

Glossary**Chapter (page 58)**

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Copy protection signals (page 40)

Copy restriction set by copyright owners, etc. These signals are included in some software or TV programs and restrict recording on this recorder.

Dolby Digital (page 77)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high quality digital audio found in "Dolby Digital" theater surround sound systems. Good channel separation is realized because all of the channel data is recorded discretely, and little deterioration occurs because all channel data processing is digital.

DTS (page 77)

Digital audio compression technology by Digital Theater Systems, Inc. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same discrete channels of high quality digital audio. Good channel separation is realized because all of the channel data is recorded discretely, and little deterioration occurs because all channel data processing is digital.

DVD+RW (page 8)

A DVD+RW (read "plus RW") is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

DVD-RW (page 8)

A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVDs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+R (page 8)

A DVD+R (read "plus R") is a recordable disc that is the same size as a DVD VIDEO. Contents can be recorded only once to a DVD+R, and will have the same format as a DVD VIDEO.

DVD VIDEO (page 8)

A disc that contains up to eight hours of moving pictures on a disc the same diameter as a CD. The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB. The picture data uses the MPEG 2 format, which is a worldwide standard of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.

Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided on the DVD.

Language Code List

For details, see page 73.

The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code Language	Code Language	Code Language	Code Language
1027 Afar	1183 Irish	1347 Maori	1507 Samoan
1028 Abkhazian	1186 Scots Gaelic	1349 Macedonian	1508 Shona
1032 Afrikaans	1194 Galician	1350 Malayalam	1509 Somali
1039 Amharic	1196 Guarani	1352 Mongolian	1511 Albanian
1044 Arabic	1203 Gujarati	1353 Moldavian	1512 Serbian
1045 Assamese	1209 Hausa	1356 Marathi	1513 Siswati
1051 Aymara	1217 Hindi	1357 Malay	1514 Sesotho
1052 Azerbaijani	1226 Croatian	1358 Maltese	1515 Sundanese
1053 Bashkir	1229 Hungarian	1363 Burmese	1516 Swedish
1057 Byelorussian	1233 Armenian	1365 Nauru	1517 Swahili
1059 Bulgarian	1235 Interlingua	1369 Nepali	1521 Tamil
1060 Bihari	1239 Interlingue	1376 Dutch	1525 Telugu
1061 Bislama	1245 Inupiaq	1379 Norwegian	1527 Tajik
1066 Bengali	1248 Indonesian	1393 Occitan	1528 Thai
1068 Bangla	1253 Icelandic	1403 (Afan)Oromo	1529 Tigrinya
1067 Tibetan	1254 Italian	1408 Oriya	1531 Turkmen
1070 Breton	1257 Hebrew	1417 Punjabi	1532 Tagalog
1079 Catalan	1261 Japanese	1428 Polish	1534 Setswana
1093 Corsican	1269 Yiddish	1435 Pashto;	1535 Tonga
1097 Czech	1283 Javanese	1480 Pushto;	1538 Turkish
1103 Welsh	1287 Georgian	1436 Portuguese	1539 Tsonga
1105 Danish	1297 Kazakh	1463 Quechua	1540 Tatar
1109 German	1298 Greenlandic	1481 Rhaeto-	1543 Twi
1130 Bhutanese	1299 Cambodian	1482 Romance	1557 Ukrainian
1142 Greek	1301 Kannada	1482 Kirundi	1564 Urdu
1144 English	1301 Korean	1483 Romanian	1572 Uzbek
1145 Esperanto	1305 Kashmiri	1489 Russian	1581 Vietnamese
1149 Spanish	1307 Kurdish	1491 Kinyarwanda	1587 Volapük
1150 Estonian	1311 Kirghiz	1495 Sanskrit	1613 Wolof
1151 Basque	1313 Latin	1498 Sindhi	1632 Xhosa
1157 Persian	1326 Lingala	1501 Sangho	1665 Yoruba
1165 Finnish	1327 Laotian	1502 Serbo-	1684 Chinese
1166 Fijian	1332 Lithuanian	1697 Zulu	
1171 Faroese	1334 Latvian;	1503 Singhalese	
1174 French	1335 Lettish	1505 Slovak	
1181 Frisian	1345 Malagasy	1506 Slovenian	
		1703 Not specified	

Cable Box/Satellite Receiver Brand Code

If more than one code number is listed, try entering them one at a time until you find the one that works with your cable box/satellite receiver.

Cable box brand	Code number
3M	0033
ABC	0003, 0011, 0017, 0008, 0014, 0001, 0013, 0206, 0047, 0237, 0033
Accuphase	0003, 0013, 0047, 0001, 0011, 0017, 0014, 0206
Acorn	1102, 0237
Action	0237
Active	0237, 1102
Aim	0015
Allegro	0315, 0153
Amark	0008, 0277, 0144, 0056
American	0060
Americast	0899
Antronix	0207, 0022
Anvision	0211, 0111
Apache	0770
Arbatron	0014, 0011, 0003, 0476
Archer	0153, 0022, 0207, 0039, 0797, 0237, 0260
ASE	1080
Auna	1269
BBT	0267
BCC	0276
Belcor	0056, 0022
Bell & Howell	0014
Bell Atlantic	0641
Bell South	0899
Bestlink	0303
Betavue	0022
British Telecom	0003
BVS	0641

96

Cable box brand	Code number
Cable Healthcare	0769, 0058
Cable Star	0056
Cabletenna	0022, 0039
Cableview	0022
Century	0153, 0618, 0008, 0315
Citation	0017
Citizen	0153, 0315, 0078, 0242
Clearmaster	0883
ClearMax	0883, 1247
Colour Voice	0031, 0025
Comband	0233, 0232
Comtec	0274
Comtronics	0060, 0040
Comtronics Eagle	0040, 0060
Contec	0019
Coolmax	0883
Curtis Mathes	0015, 0242
Dae Ryung Eagle	0008
Daeryung	0008, 0877, 0477, 0277, 1877
Diamond	0035
Digeo	1476
Digi	0637
Director	0476
Dumont	0637
Eagle Comtronics	0060, 0028
Eastern	0002, 0274, 0418
Electricord	0078
Emerson	0797, 0303, 0015, 0014
Everquest	0040, 0015
Focus	0400
Fosgate	0276
Funai	0248, 0019
FutureVision	0649
Garrand	0153
Gateway	0764
GC Electronics	0207, 0056, 0330, 0016, 0040, 0077, 0030

Cable box brand	Code number
GE	0232, 0233, 0144, 0021
Gemini	0015, 0070, 0057, 0242, 0014, 0797, 0013, 0400
General Instrument	0476, 0011, 0014, 0098, 0810, 0024, 0003, 0015, 0276
GHZ	0078
Gibraltar	0003
Global	1327
GMI	0069, 0057, 0015, 0797
GoldStar	0144, 0040
Goodmind	0770, 0797
Gradiente	1136
Hamlin	0020, 0009, 0034, 0259, 0015, 0273, 0206
Healthway Interactive	0058, 1020, 1015, 0769
Hitachi	0011, 0154, 0009, 0008, 0003, 0033, 0014, 0255
Houston Tracker	0011
Hwalin	0303
IBM	0670
IEEC	1018
Interbuy	0274
Jasco	0315, 0153, 0015
Jebsee	0014, 0400
Jerrold	0003, 0014, 0276, 0011, 0012, 0020, 0024, 0015, 0047, 0098, 0476, 0031, 0029, 0111, 0032, 0054, 0810, 0028
Kuang Yu	0024
Leon	0069, 0015
LG	0040, 0144
Lindsay	0440
Macom	0033
Maestro	0812
Magnavox	0797, 0027, 0032, 0334, 0069
Millennium	0618, 0153
Memorex	0000
Mitsubishi	0003

Cable box brand	Code number
Motorola	0476, 0276, 1476, 0810, 1376, 1254, 0400, 1106
Movie Time	0156, 0078, 0063, 0203
MS	0069, 0015, 1018, 0303
MultiVision	0012
Myrio	1117
NET	0274
Next Level	0764, 1316, 1315, 1314
Nexus	0770
Northcoast	0671, 0314
Nova Vision	0277, 0008
Novabeam	0277
Novaplex	0618, 0277, 0017, 0008
NSC	0156, 0070, 0203, 0063, 0400, 0012, 0618, 0022, 0637, 0010, 0044
Oak	0019, 0303, 0248, 0017
Omega	0015
Omniview	0371
Optimus	0021
Pace	0237
Pacific Bell	0843
Panasonic	0107, 0021, 0144, 0008, 0124, 0307, 0000, 0040
Panther	0637
Paragon	0000, 0525, 0008
Pennay	0637, 0000
Philips	0025, 0031, 0290, 0027, 0030, 0153, 0060, 0242, 0028, 0334, 0211, 0029, 0259, 0307, 0652, 0013, 0069, 0649, 0255, 0305, 0032, 0111, 0317
Pioneer	0144, 0023, 0533, 1877, 0877, 0260
Popular Mechanics	0400
Prelude	0770
Prism	0012, 0013, 0059
Protelecon	0786
Pulsar	0000, 0040
Quasar	0000

→continued 97

Additional Information

Cable box brand	Code number
Quest	0144, 0020
R Line	0040
RadioShack	0883, 0015, 0315, 0303, 0797
Rampage	0255
Ranger	1247
RCA	0021, 0060, 0797, 0047, 1256, 0843
Realistic	0207, 0153
Recoton	0153, 0400
Regal	0259, 0020, 0273, 0279, 0276
Regency	0002, 0020, 0682
Rembrandt	0070, 0153, 0040, 0022, 0011
RK	0304, 0479
Runco	0000
Samsung	0040, 0144, 0023, 0003, 0070, 0000
Sasktel	1737
Scientific Atlanta	0008, 0277, 0017, 0006, 0237, 0025, 0477, 0207, 0877, 0003, 0012, 0000, 0021, 1877
Seam	0510
Sears	0510
Sejin	1265
Sigma	0019
Signal	0040, 0015, 0011, 0035
Signature	0011
SkyCable	0112
Skygiant	1091
SL Marx	0040
Sony	1006, 1506, 1606
Spectradyne	0769, 0058
Spectravision	0058
Sprucer	0021, 0307, 0010, 0144
Standard Components	0203, 0096, 0155
Starcom	0003, 0015, 0047, 0014, 0098, 0305

98

Cable box brand	Code number
United Cable	0003, 0014, 0011, 0276
Universal	0191, 0078, 0207, 0056, 0022, 0039, 0153, 0077, 0322, 0315
US Electronics	0276, 0008, 0003, 0017
V2	0883
Videoway	0250, 0000
VideoWorks	0124
Vidtech	0244
Viewmaster	0883, 0770
Viewstar	0258, 0289, 0060, 0063, 0211, 0027, 0111, 0030, 0121
Vision	0883
Visionetics	1264
Vortex View	0883
WaveMaster	0565
Wiso	0078
Zenith	0000, 0525, 0054, 0017, 0039, 0153, 0060, 0315, 0191, 0899
Zentek	0400

Satellite receiver brand	Code number
Alphastar	0772
Atlantic Telephone	1333
Bell ExpressVu	0775
Century	0856
Chaparral	0216
Crossdigital	1109
DirecTV	0749, 0566, 0392, 1749, 0099, 1109, 1076, 1442, 1856, 0247, 1142, 1639, 0724, 0639, 0819
Dish Network System	0775, 1005, 1170
Dispro	0775, 1005
Echostar	0775, 1170, 1005
Expressvu	0775
Galaxis	0863
GE	0566
General Instrument	0361, 0869, 0627
GOI	0775
Gradient	0856
Hitachi	0819, 0749
Houston Tracker	0775
HTS	0775
Hughes Network Systems	0749, 1749, 1442, 1142
Humax	1176, 1359, 1048, 0863, 0283
Innova	0099
Jerrold	0361, 0036, 0627
JVC	0775, 1170
Magnavox	0722, 0724
McIntosh	0869
Memorex	0724
Mitsubishi	0749
Motorola	0869
NEC	1270
Netsat	0099
Next Level	0869
Optimus	0724
Panasonic	0247, 0701

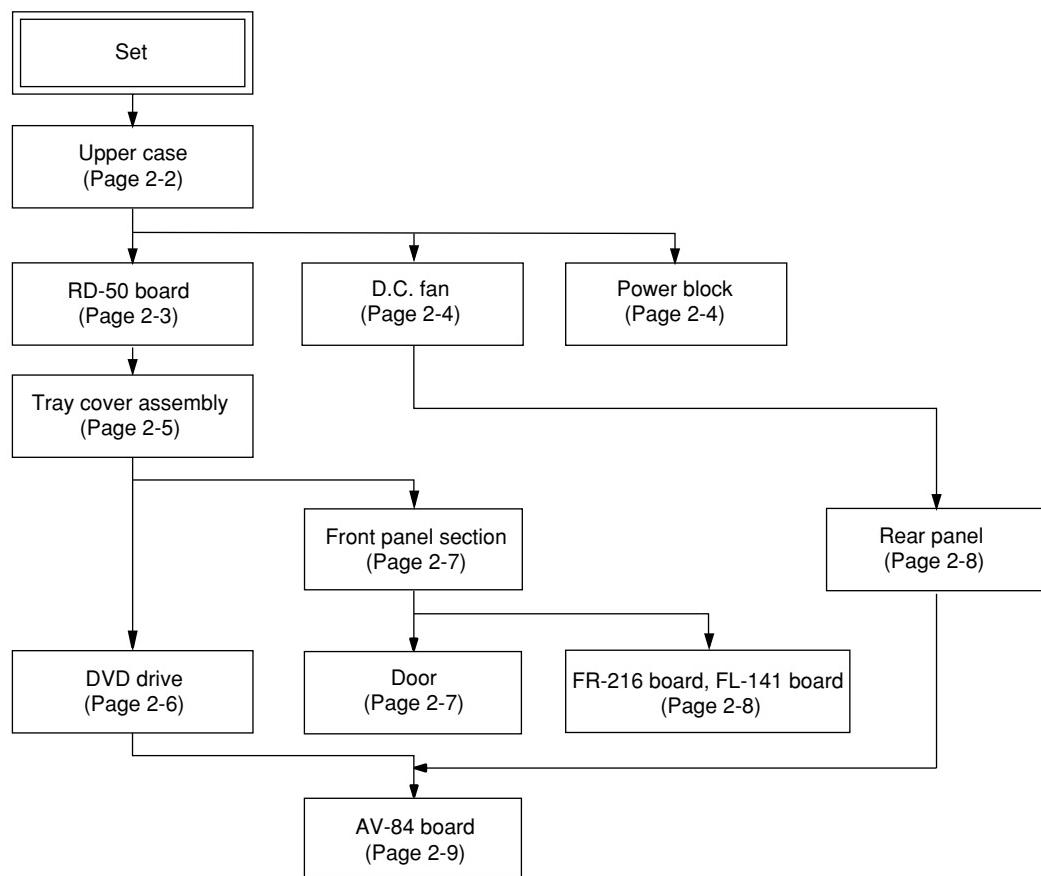
Additional Information

Satellite receiver brand	Code number
Paysat	0724
Philips	1076, 0099, 1142, 0724, 0722, 0749, 1442, 1749, 0856, 0775
Primestar	0361, 0627, 0869
Proscan	0392, 0566
QNS	1367
RadioShack	0869
RCA	0566, 0392, 0143, 0855
Samsung	1109, 1276
Sky	0856, 0099, 1856
Sony	0639, 1639
Star Choice	0869
Star Trak	0869, 0772
Thomson	0566, 0392
Tivo	1142, 1442
Toshiba	0790, 0749, 1749, 1285
UEC	1333, 1358
Uniden	0724, 0722
Video Cipher II Plus	0361
Zenith	0856, 1856

MEMO

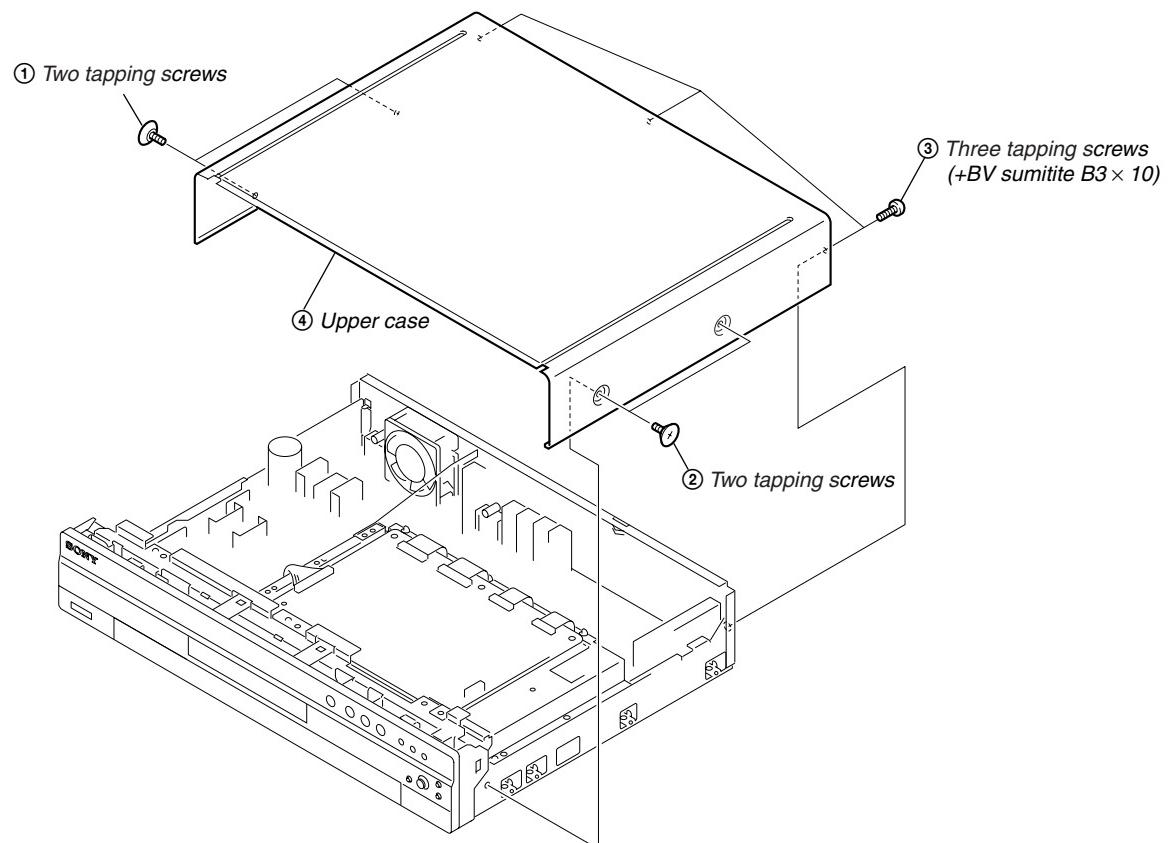
SECTION 2 DISASSEMBLY

NOTE: The following flow chart shows the disassembly procedure.

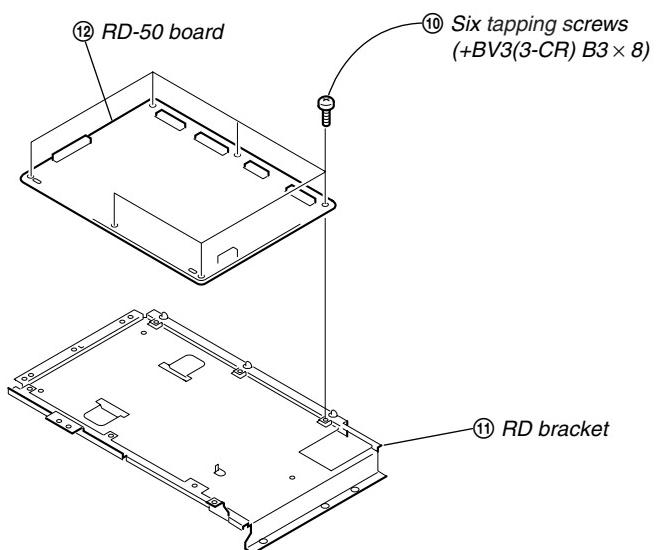
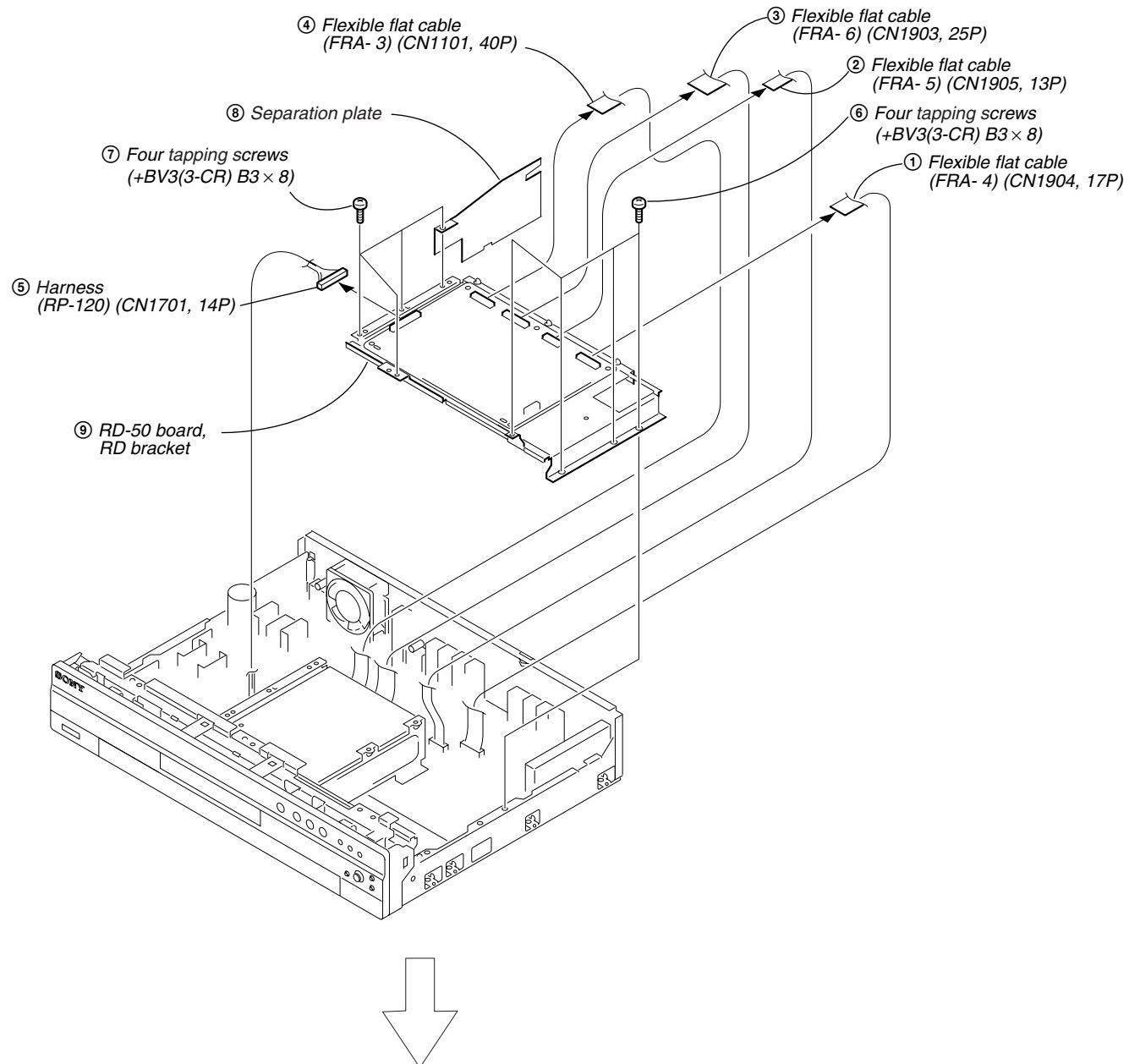


NOTE: Follow the disassembly procedure in the numerical order given.

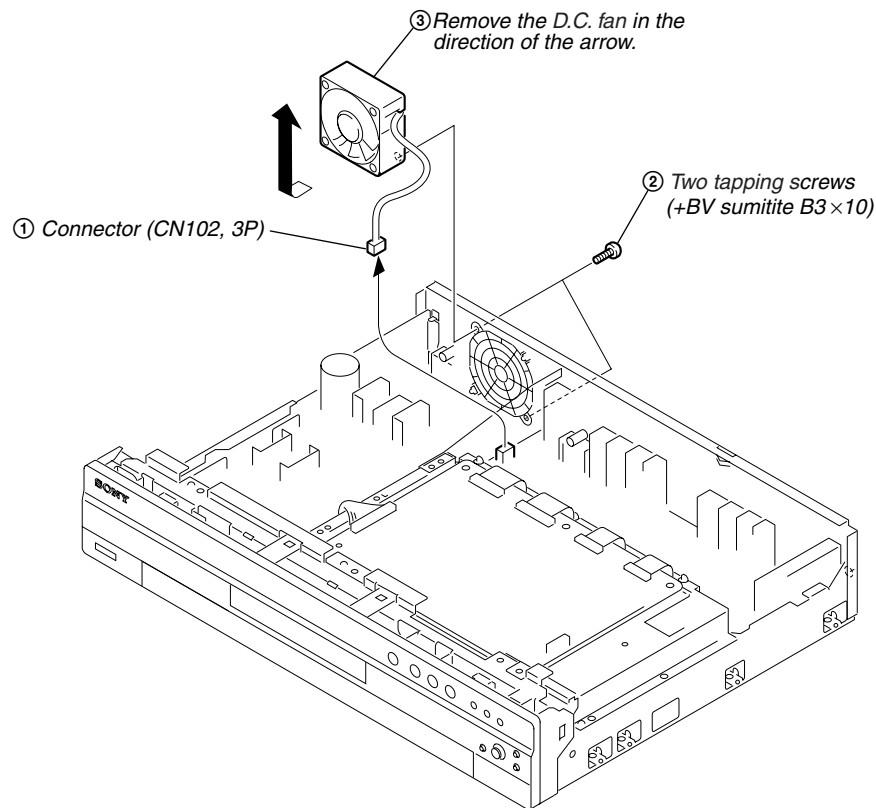
2-1. UPPER CASE



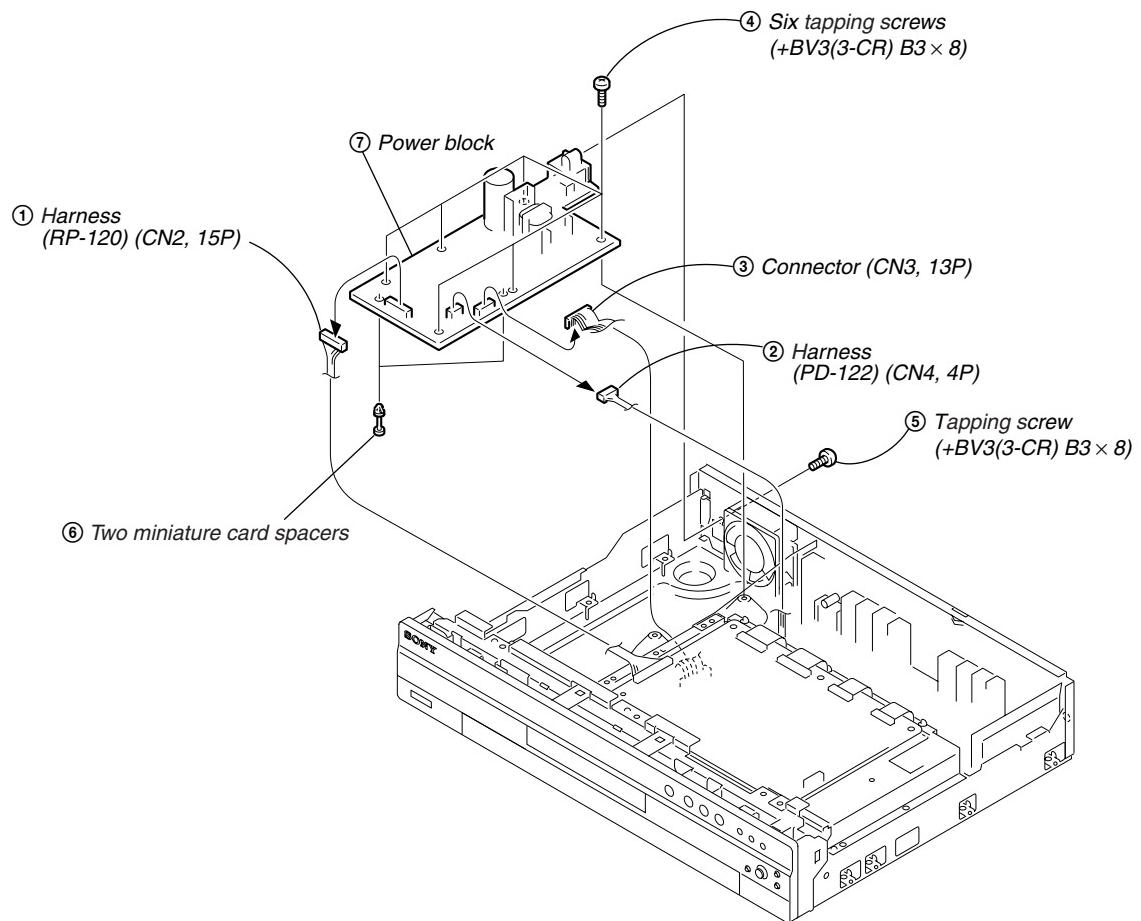
2-2. RD-50 BOARD



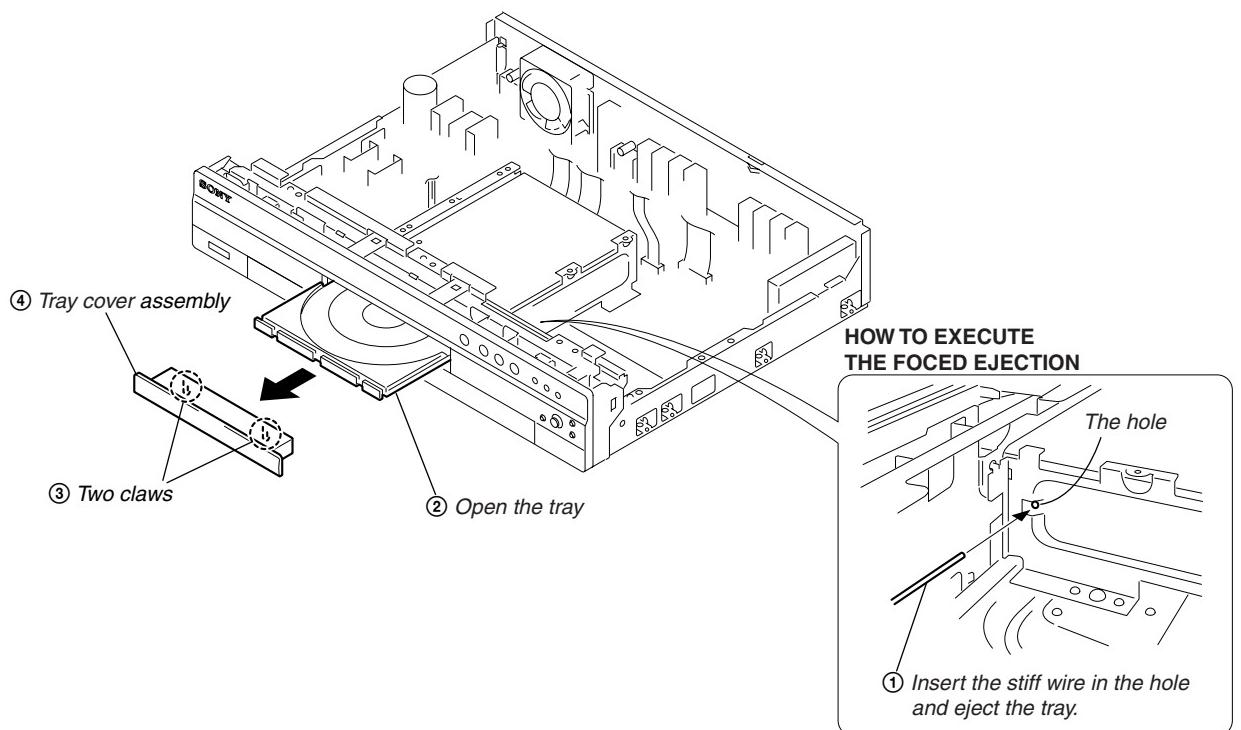
2-3. D.C. FAN



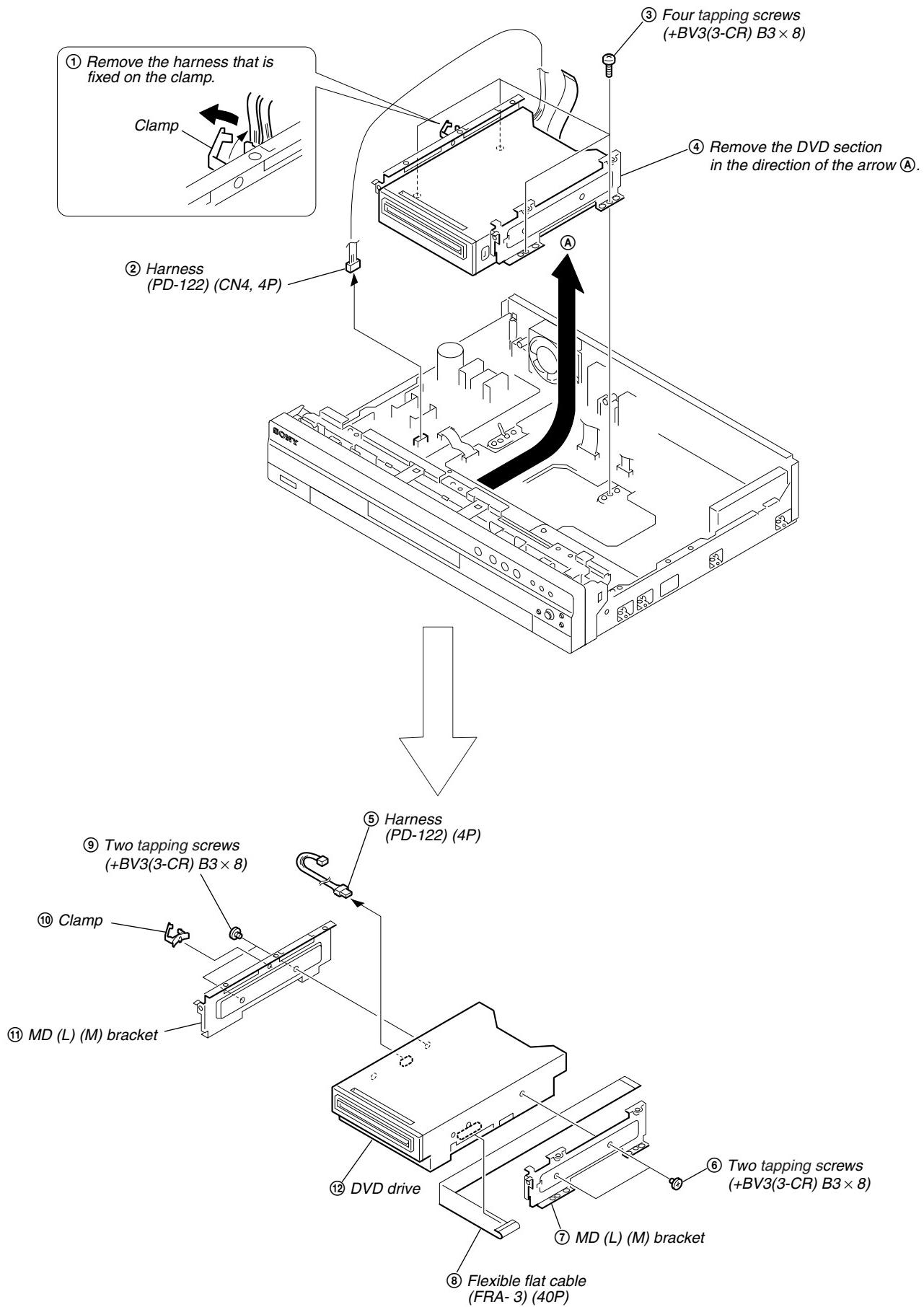
2-4. POWER BLOCK



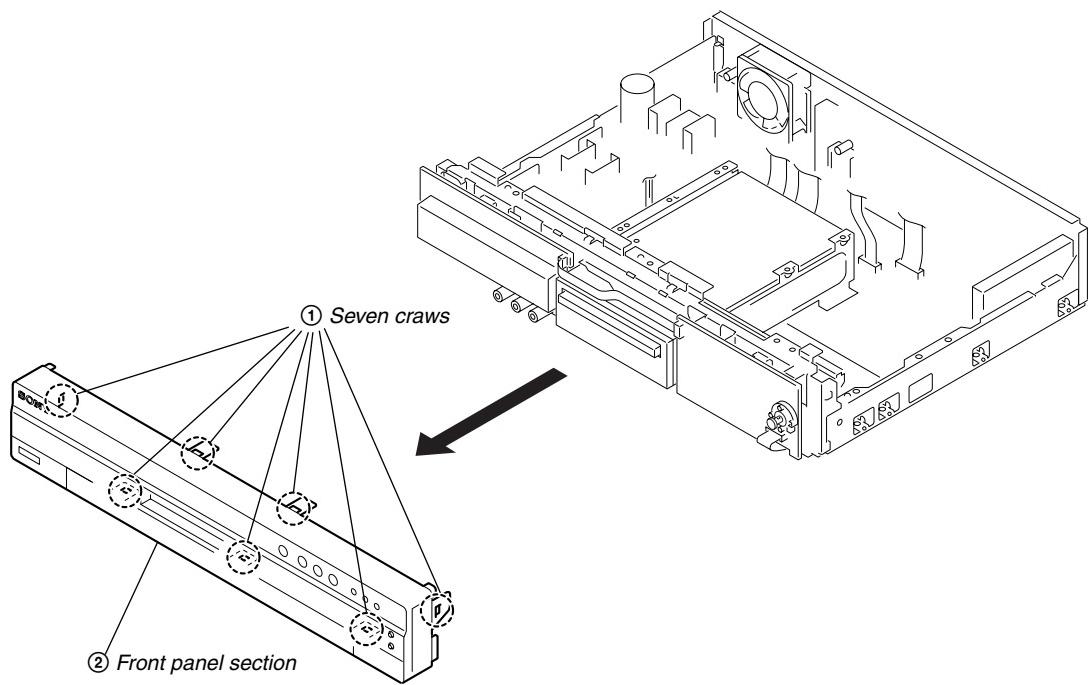
2-5. TRAY COVER ASSEMBLY



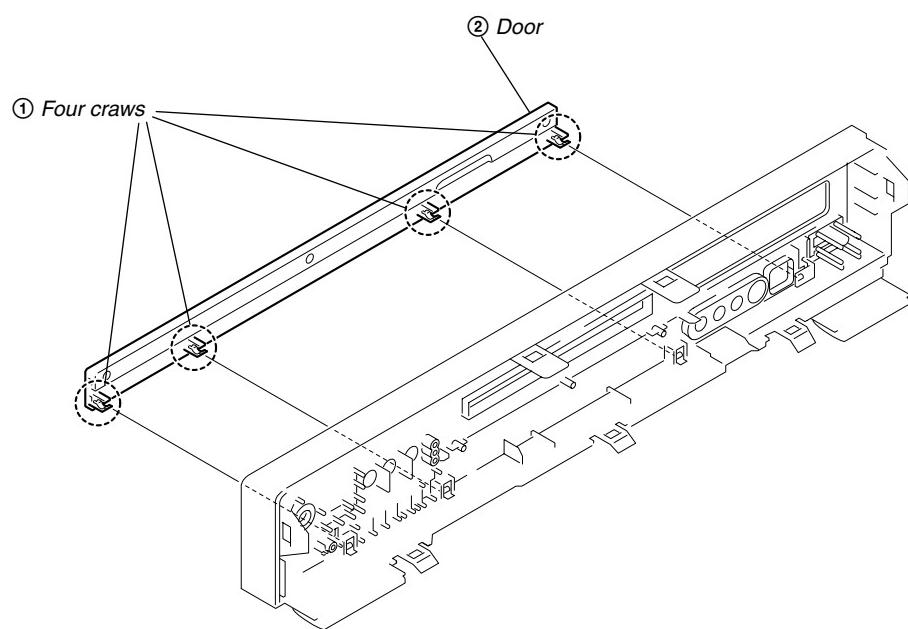
2-6. DVD DRIVE



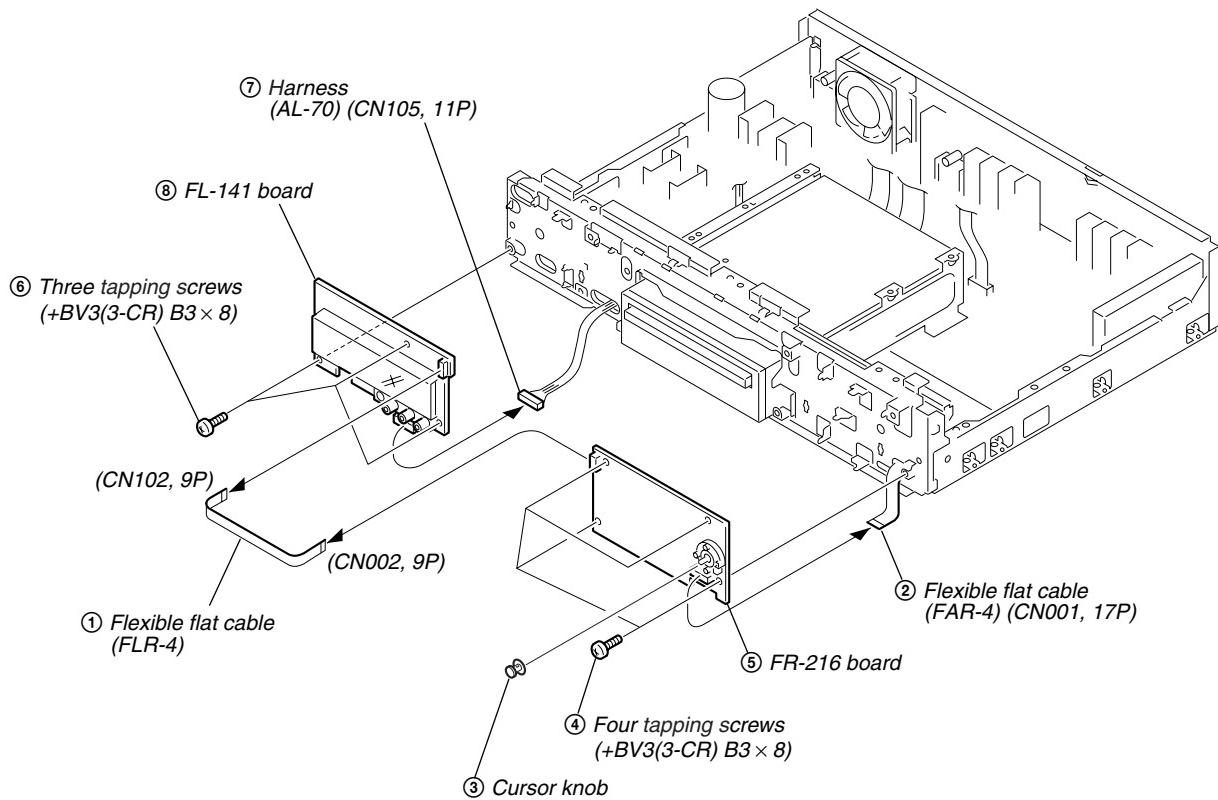
2-7. FRONT PANEL SECTION



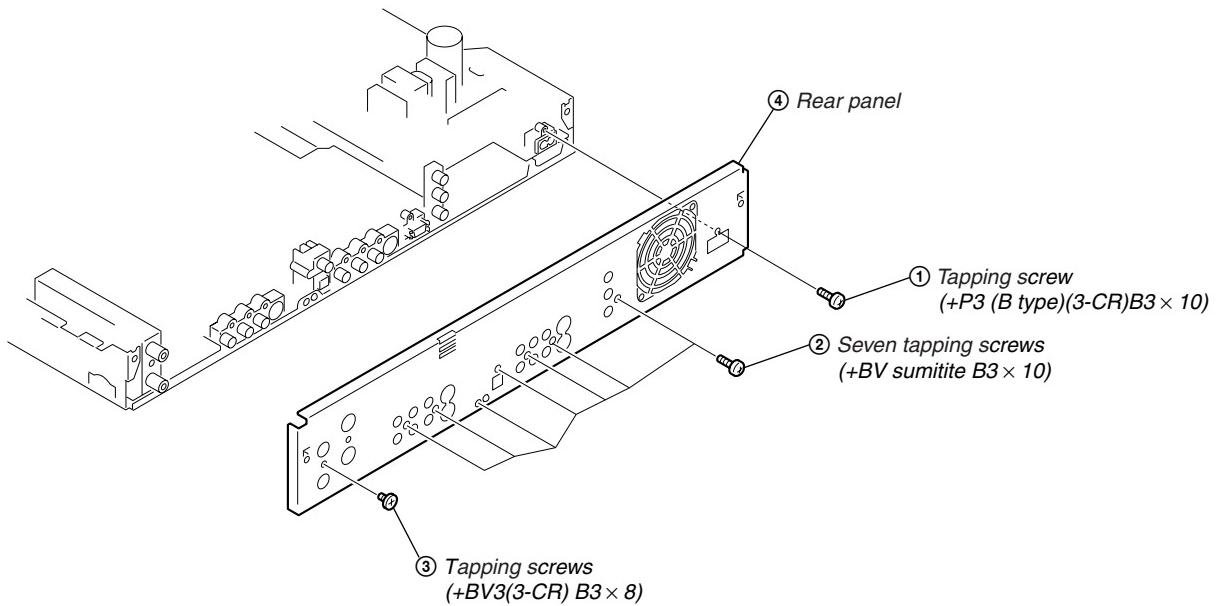
2-8. DOOR



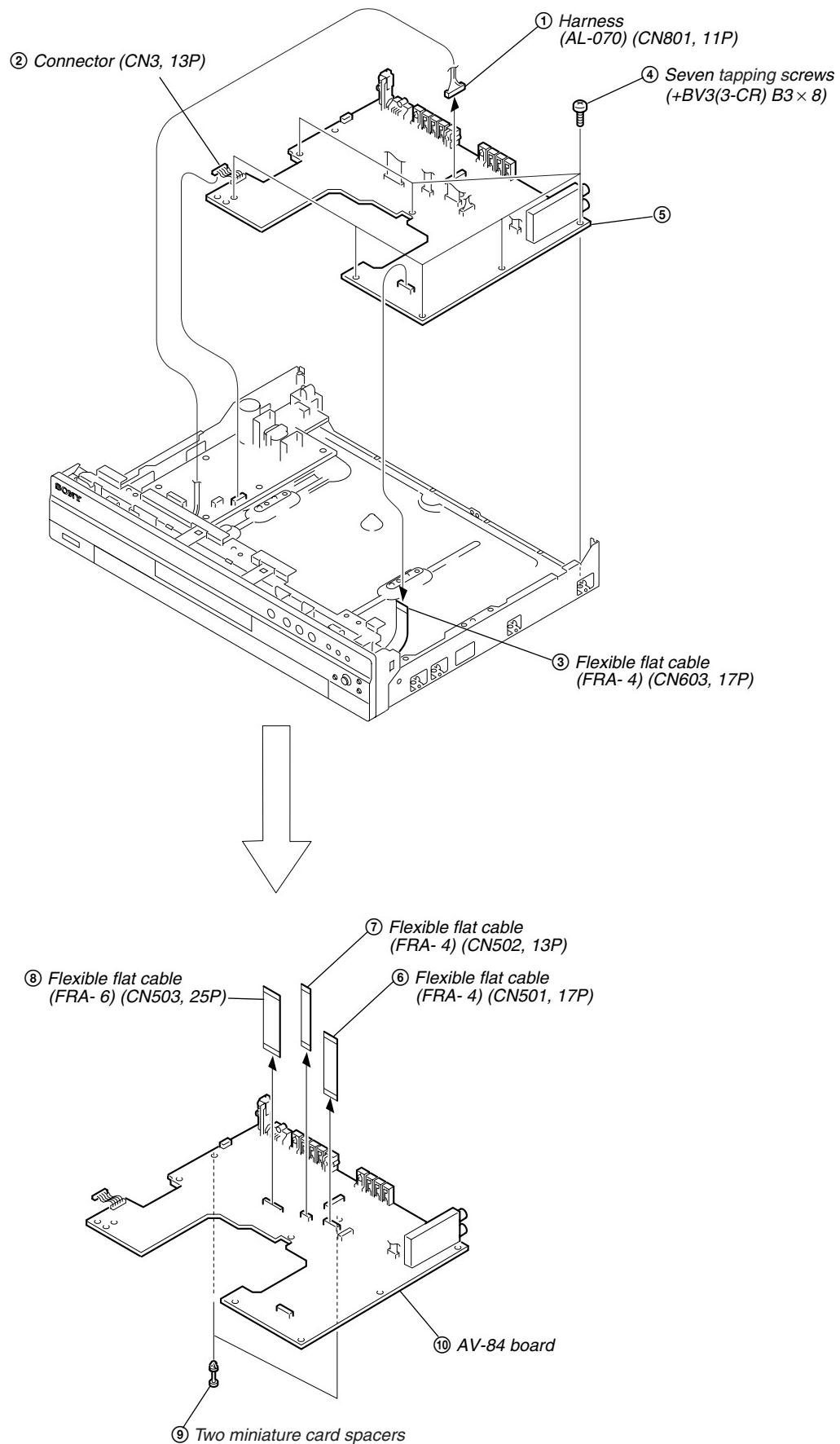
2-9. FR-216 BOARD, FL-141 BOARD



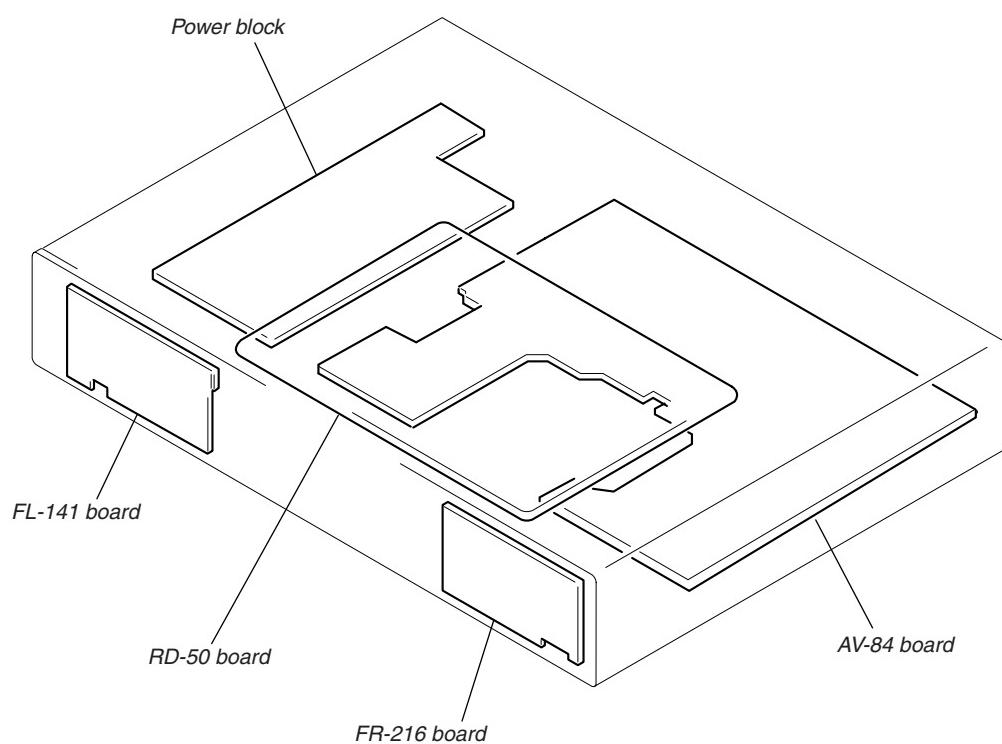
2-10. REAR PANEL



2-11. AV-84 BOARD



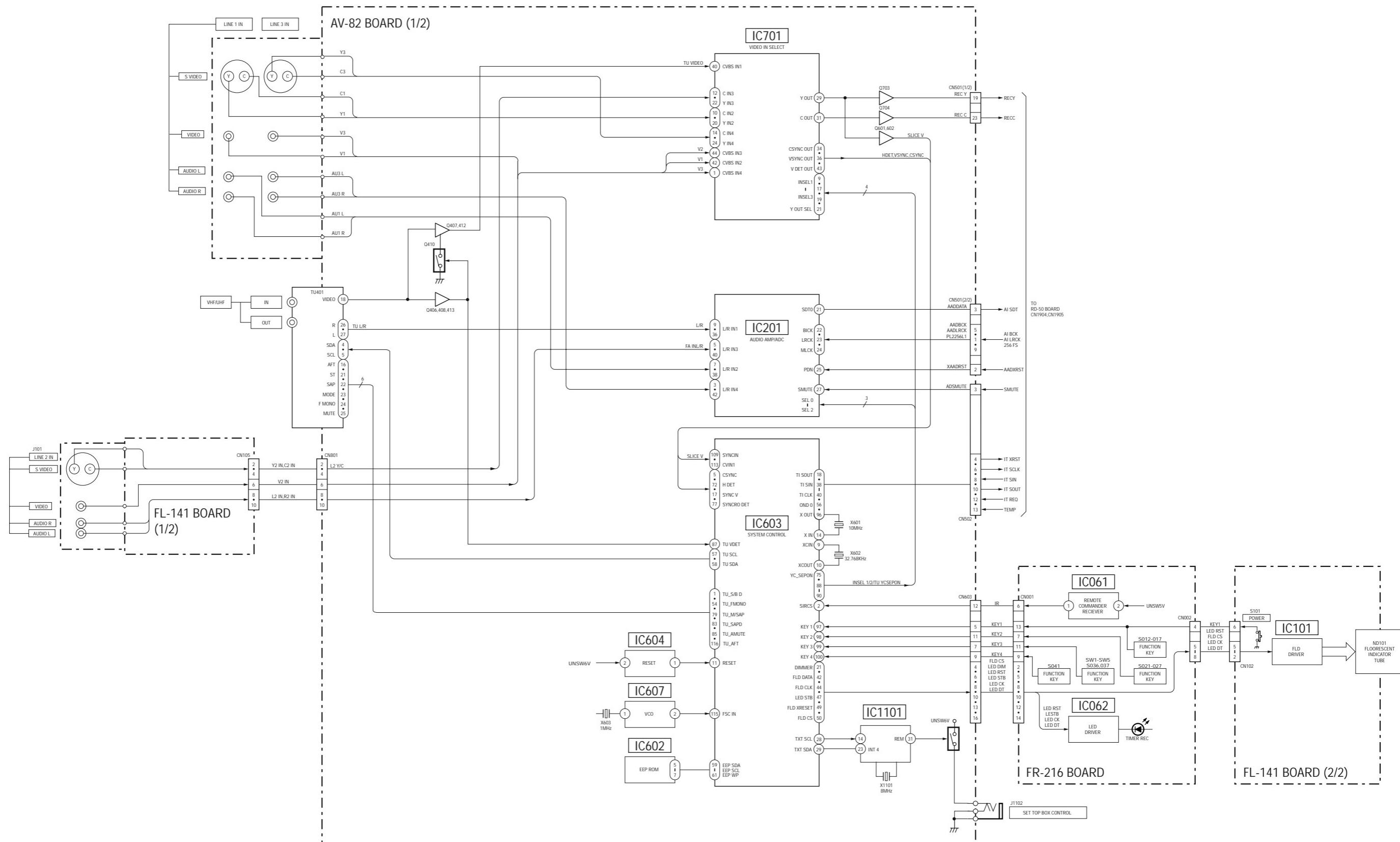
2-12. CIRCUIT BOARDS LOCATION



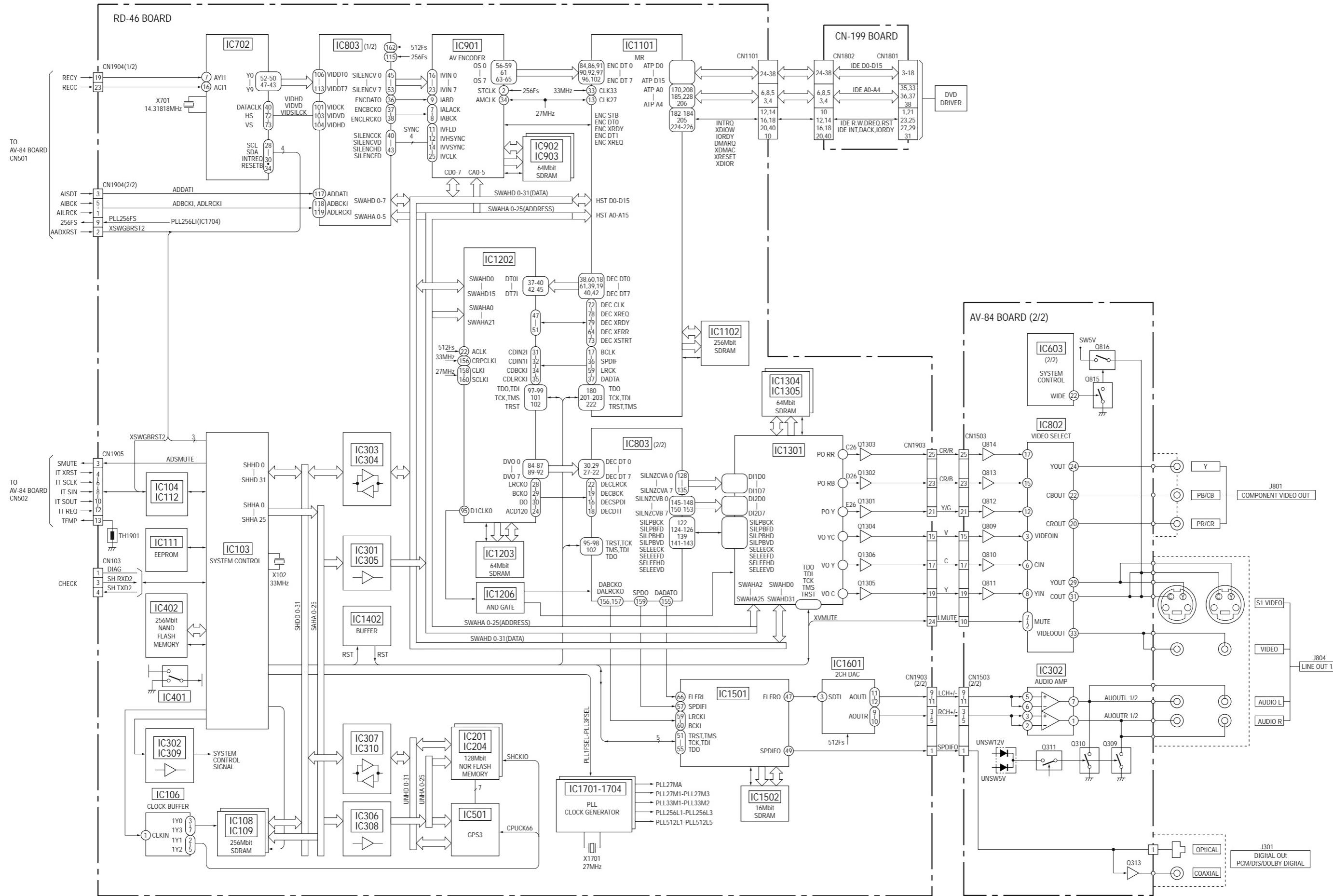
SECTION 3

BLOCK DIAGRAMS

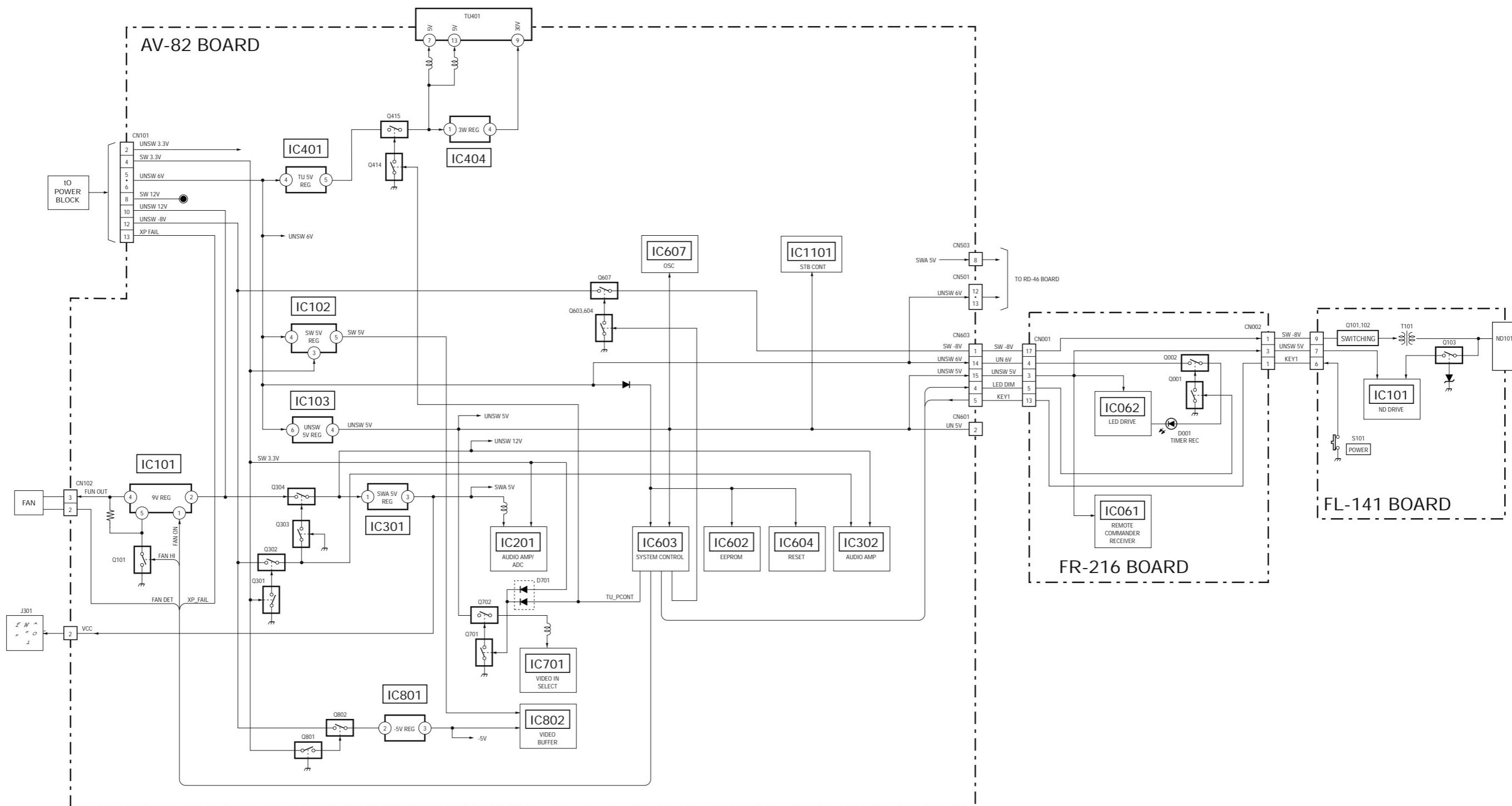
3-1. OVERALL BLOCK DIAGRAM (1/2)



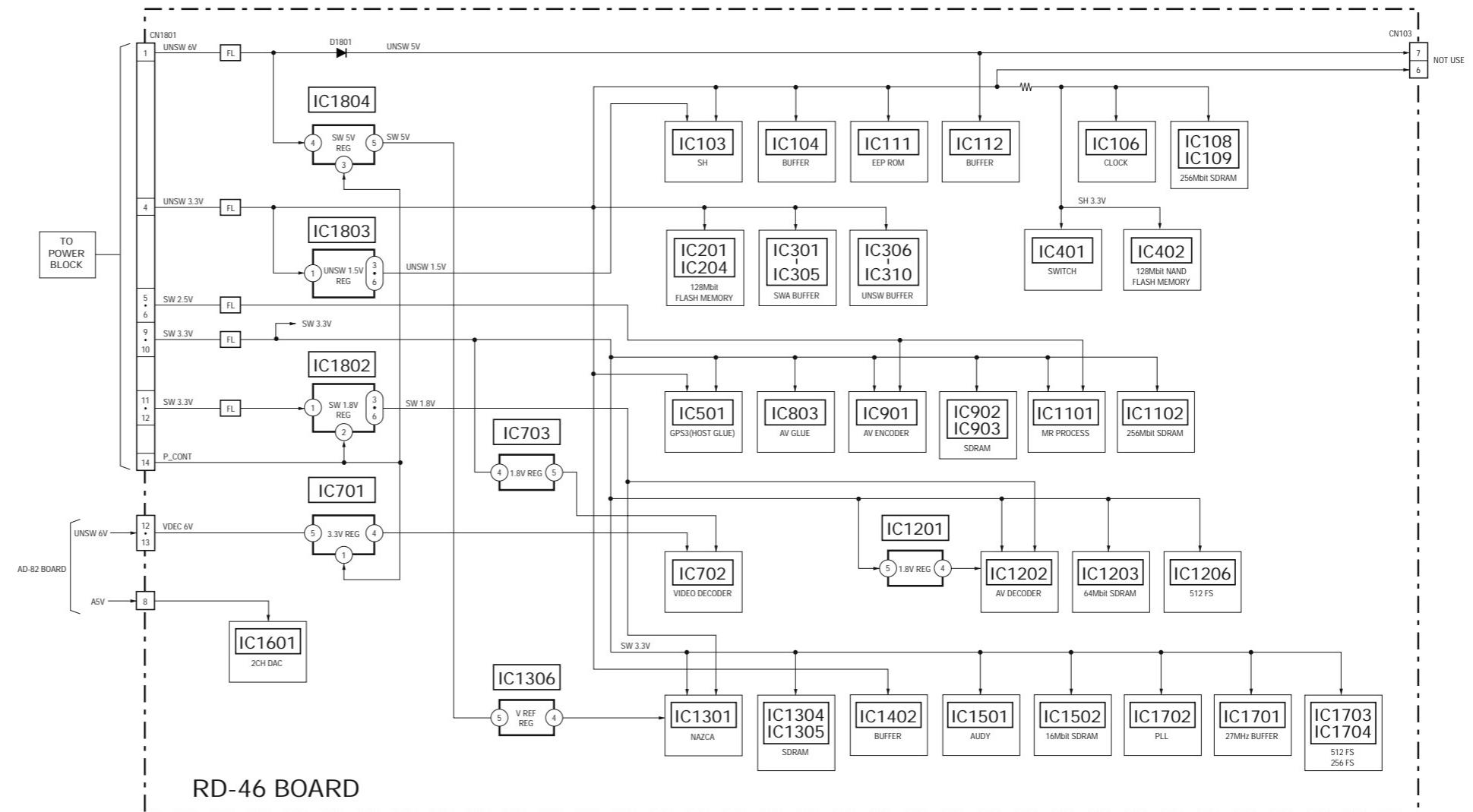
3-2. OVERALL BLOCK DIAGRAM (2/2)



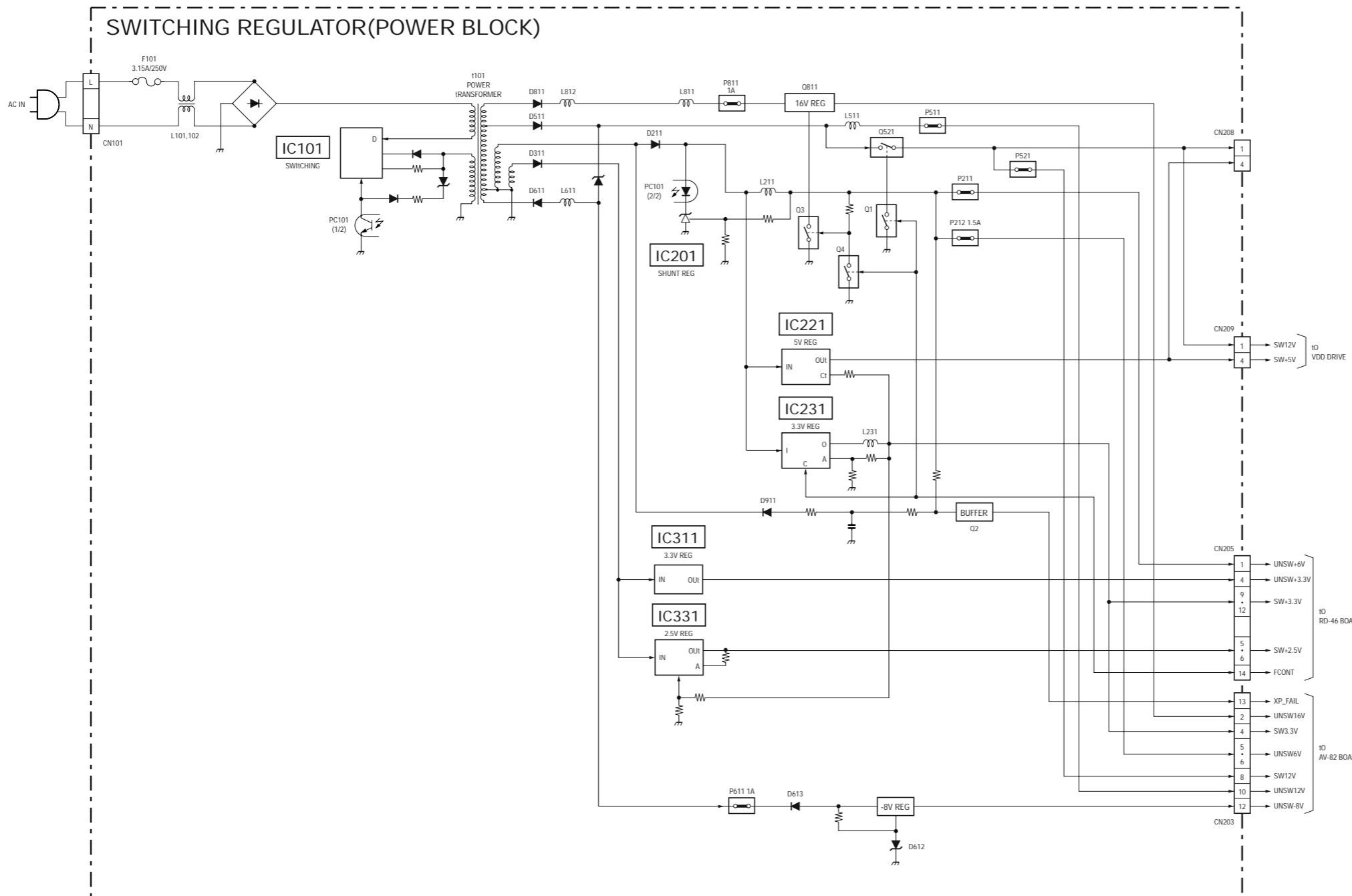
3-3. POWER BLOCK DIAGRAM (1/3)



3-4. POWER BLOCK DIAGRAM (2/3)



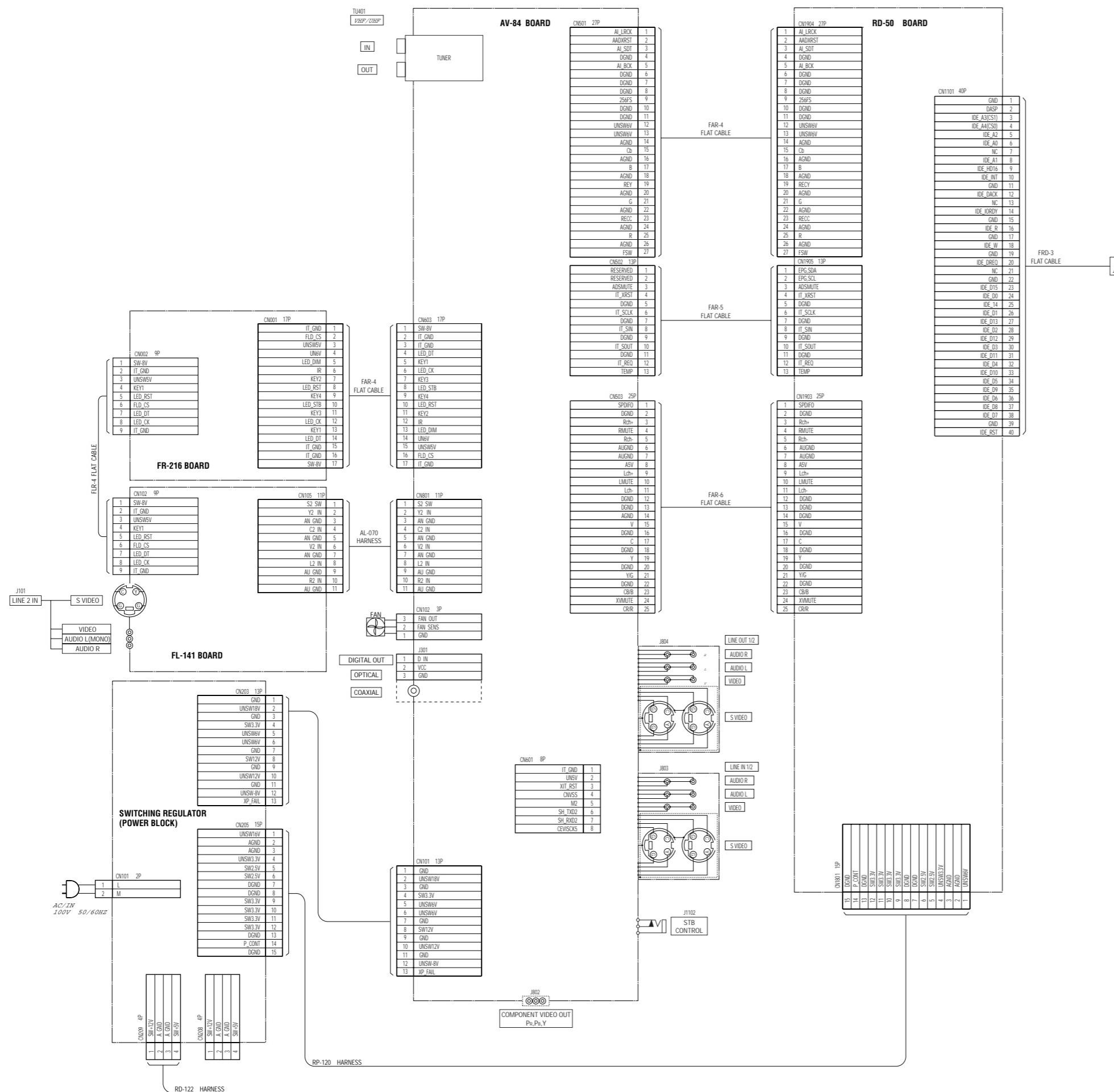
3-5. POWER BLOCK DIAGRAM (3/3)



MEMO

SECTION 4 SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)****(For schematic diagrams)**

- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\mu\text{F}$. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) un-less otherwise specified.
 $\text{k}\Omega=1000\Omega$, $\text{M}\Omega=1000\text{k}\Omega$.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : non flammable resistor
- : fusible resistor
- : panel designation
- : internal component.
- : adjustment for repair.
- : B+ Line
- : B- Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

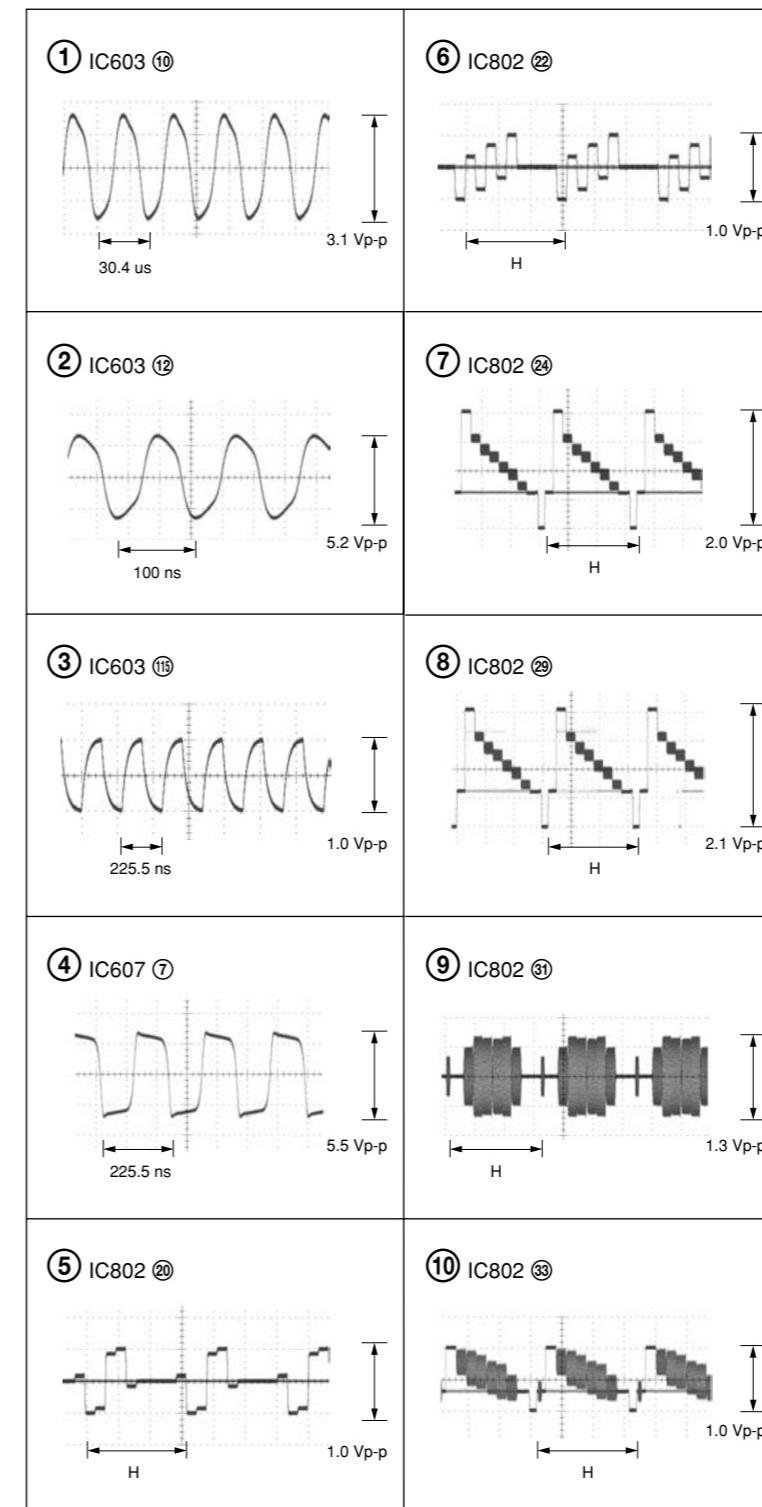
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

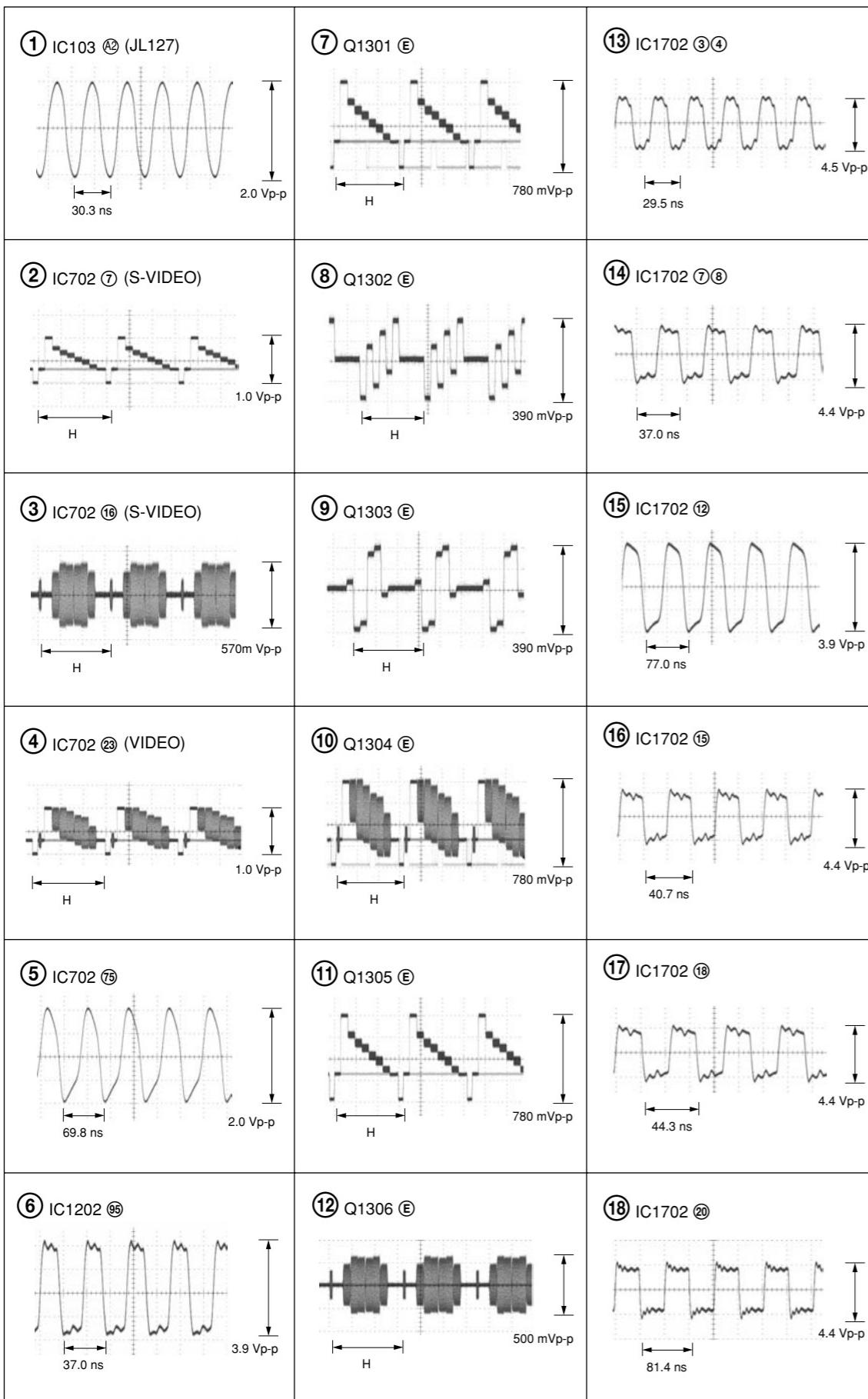
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

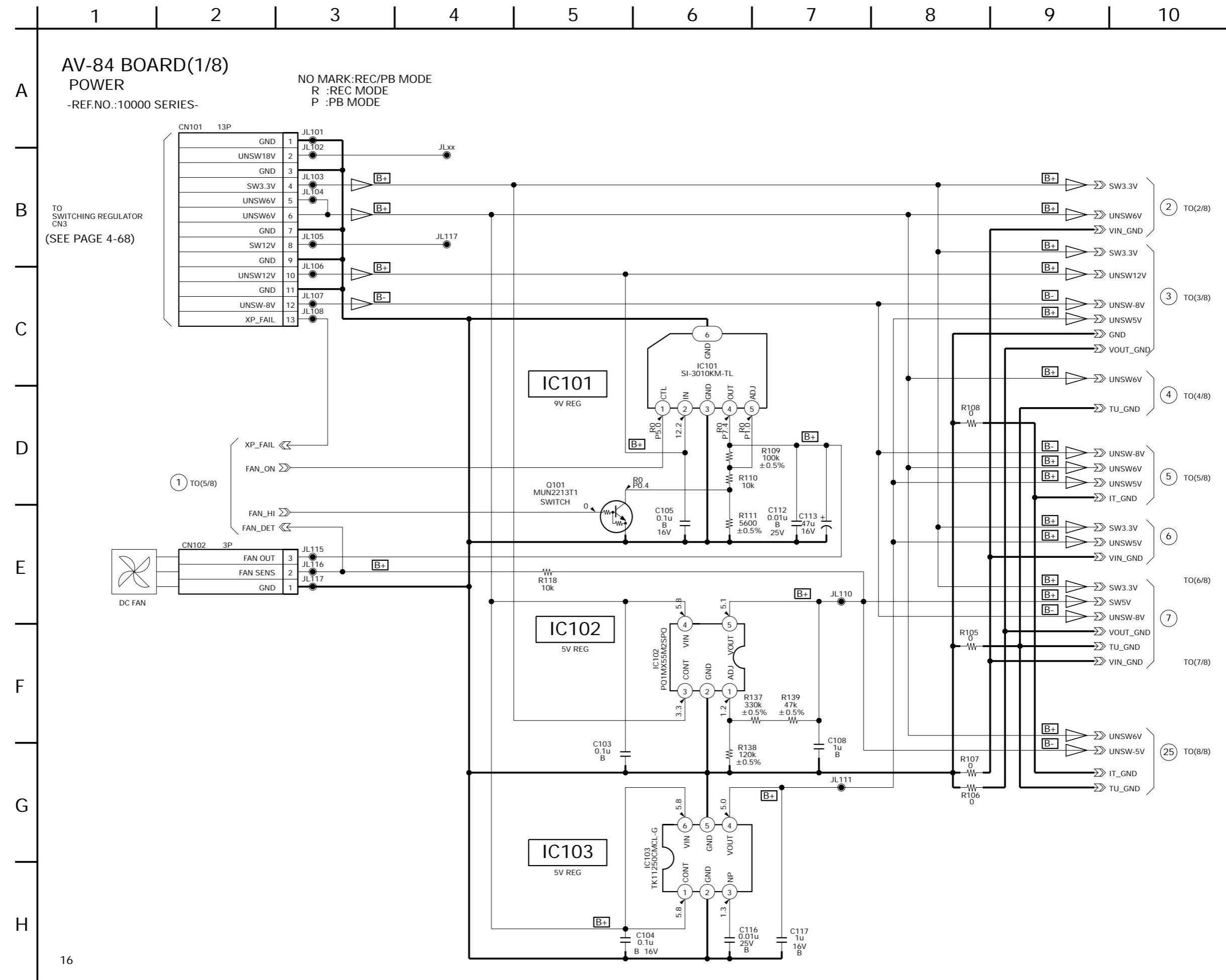
When indicating parts by reference number, please include the board name.

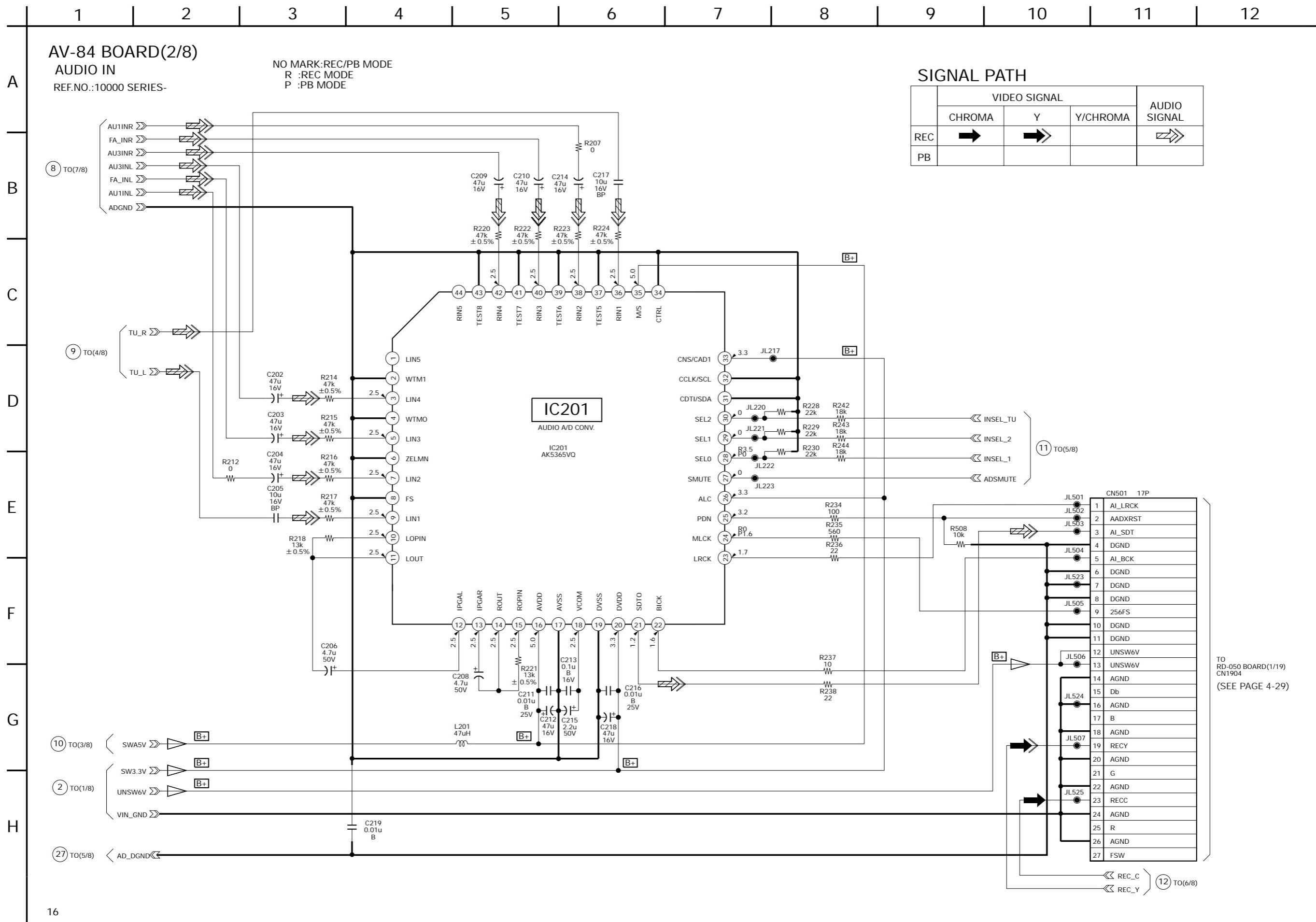
WAVEFORMS

AV-84 BOARD



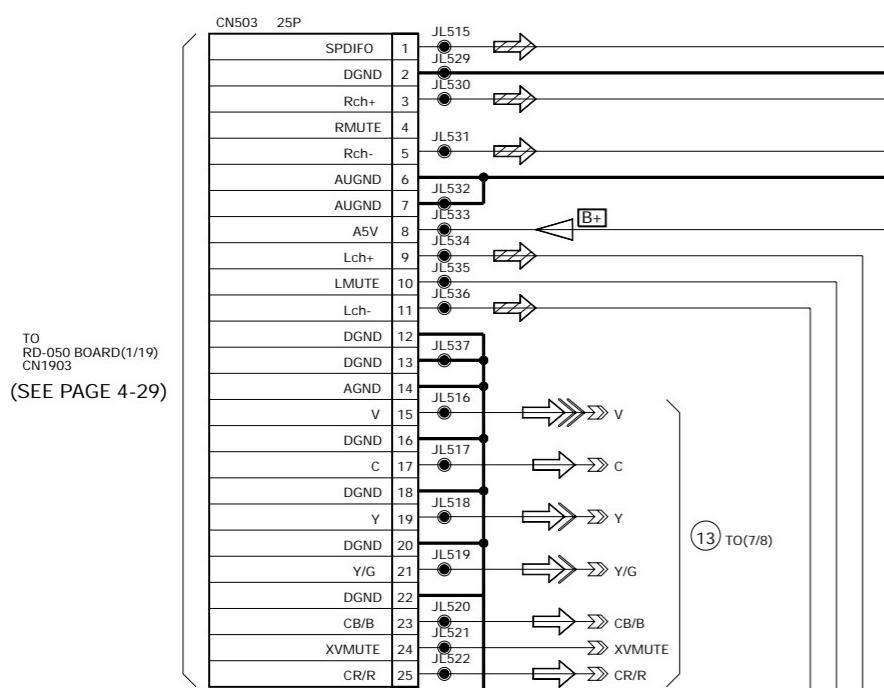
RD-50 BOARD



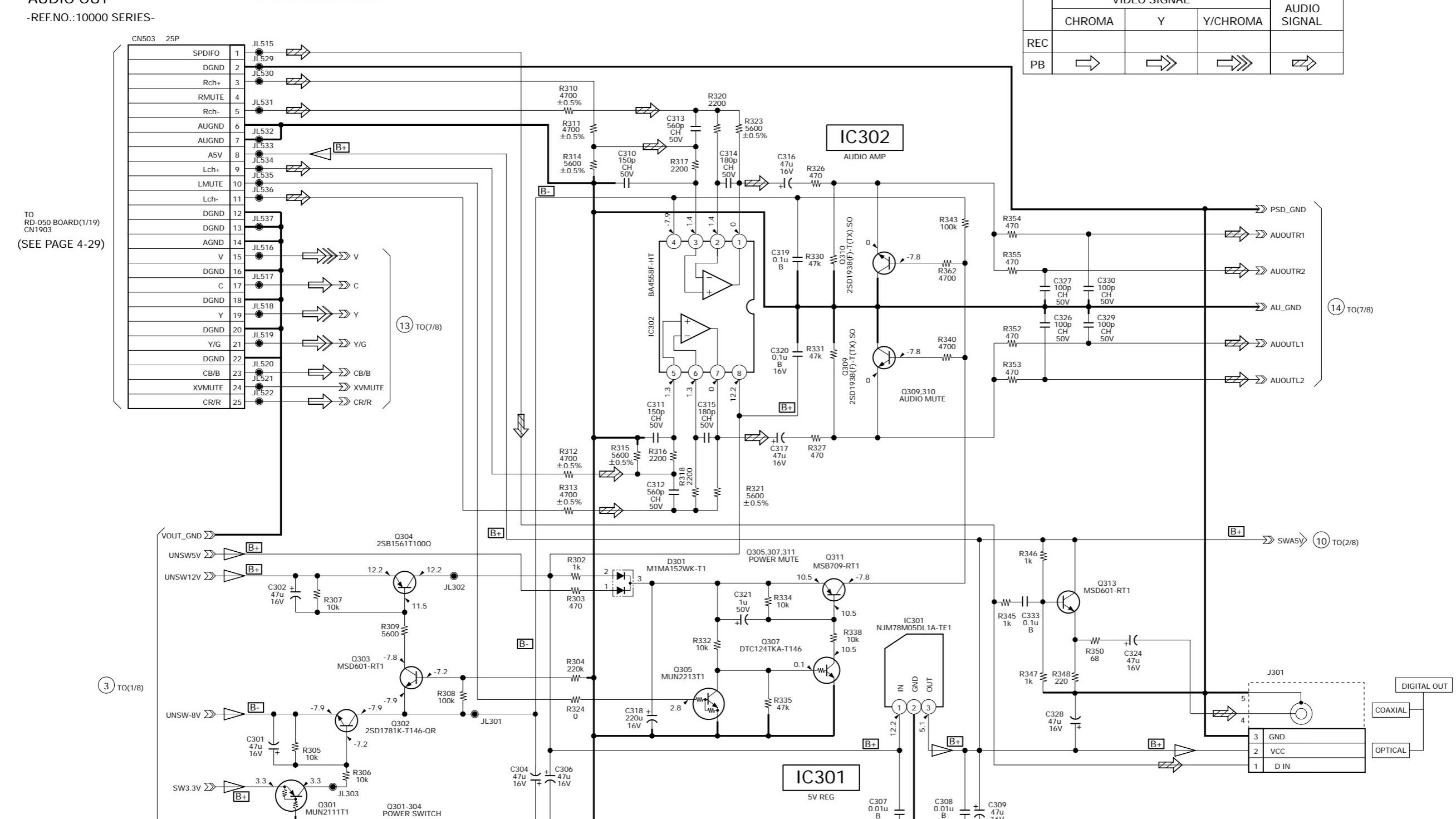


1 2 3 4 5 6 7 8 9 10 11 12 13

AV-84 BOARD(3/8)

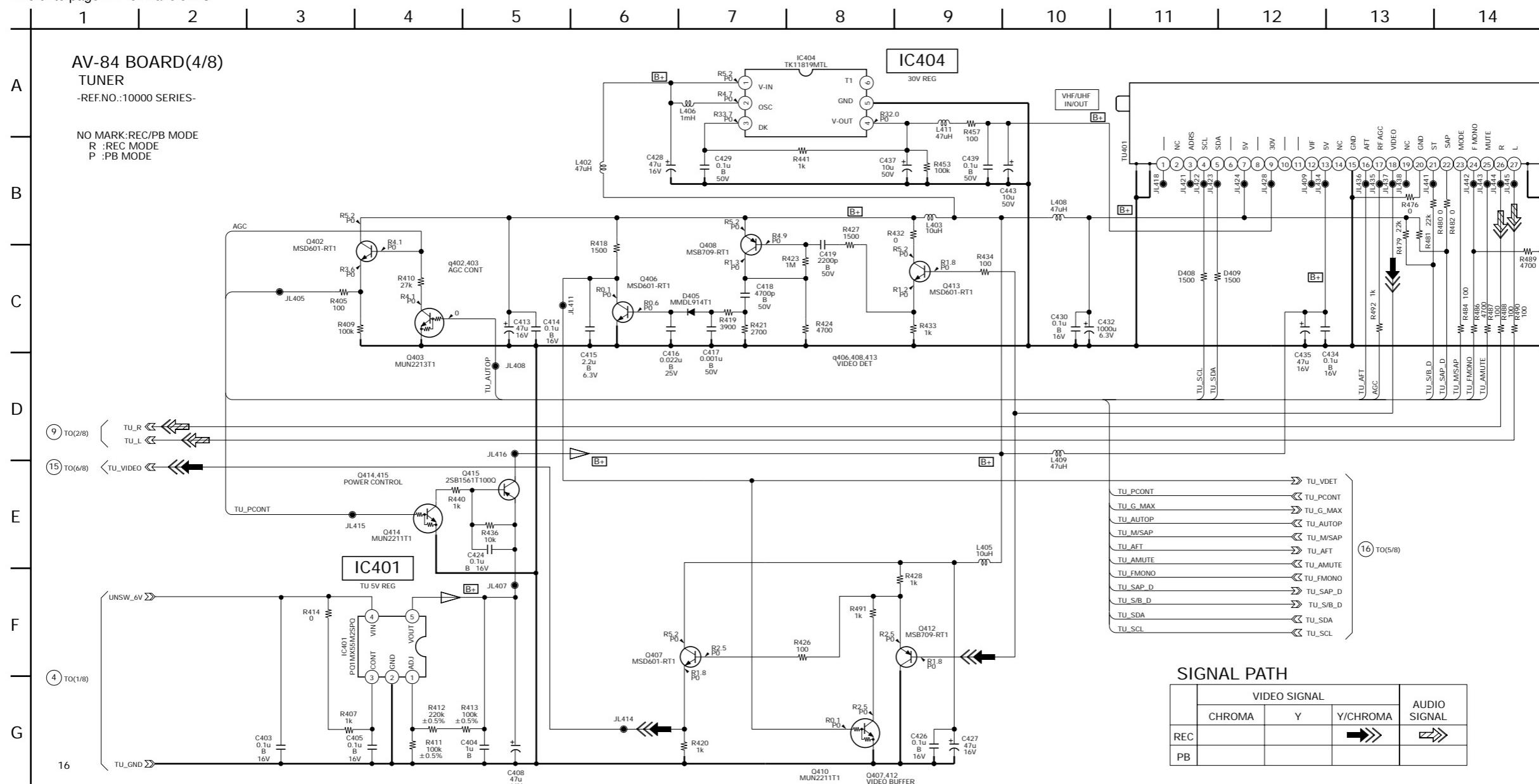
AUDIO OUT
-REF.NO:10000 SERIES-

NO MARK:REC/PB MODE



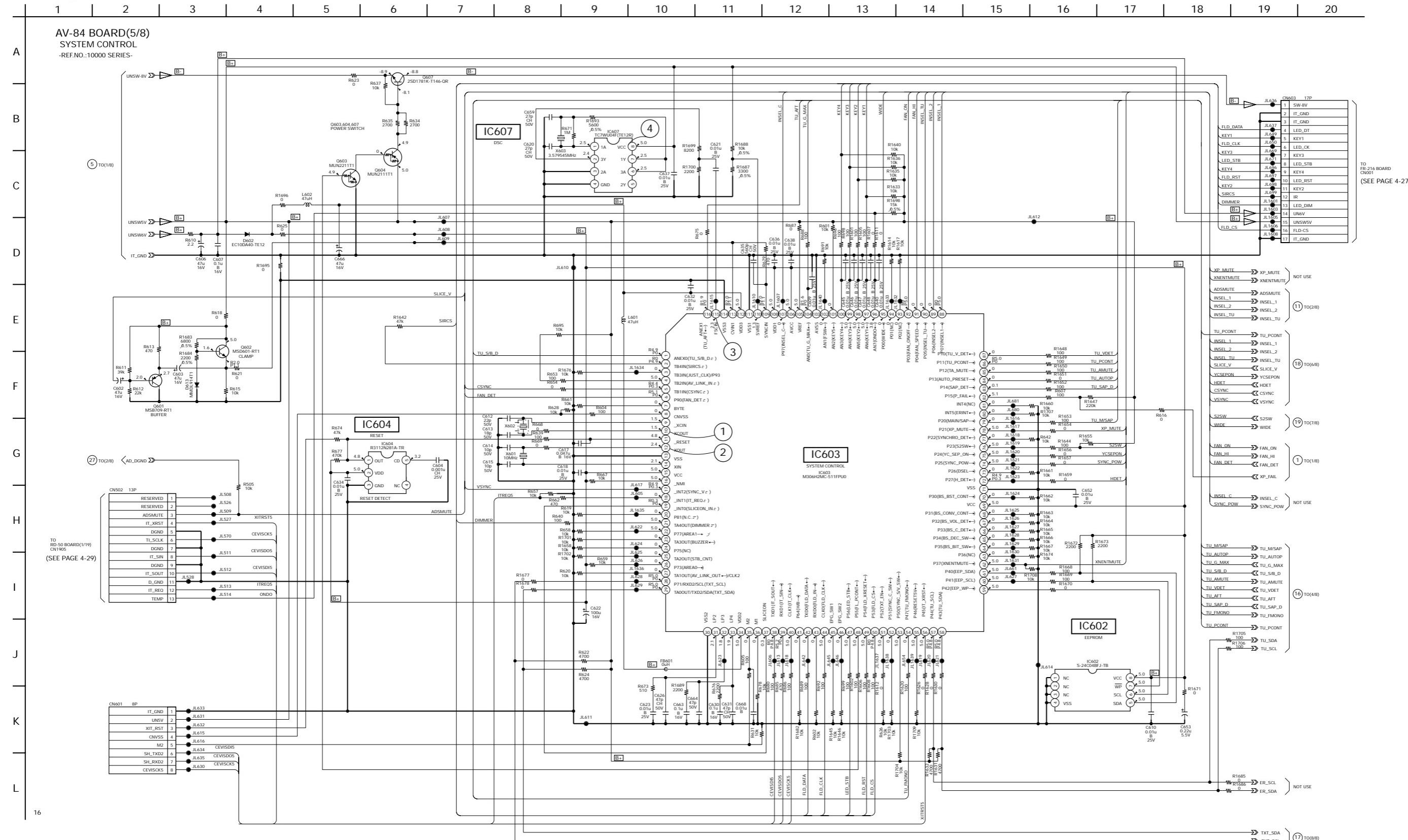
For Schematic Diagram

• Refer to page 4-4 for waveforms.



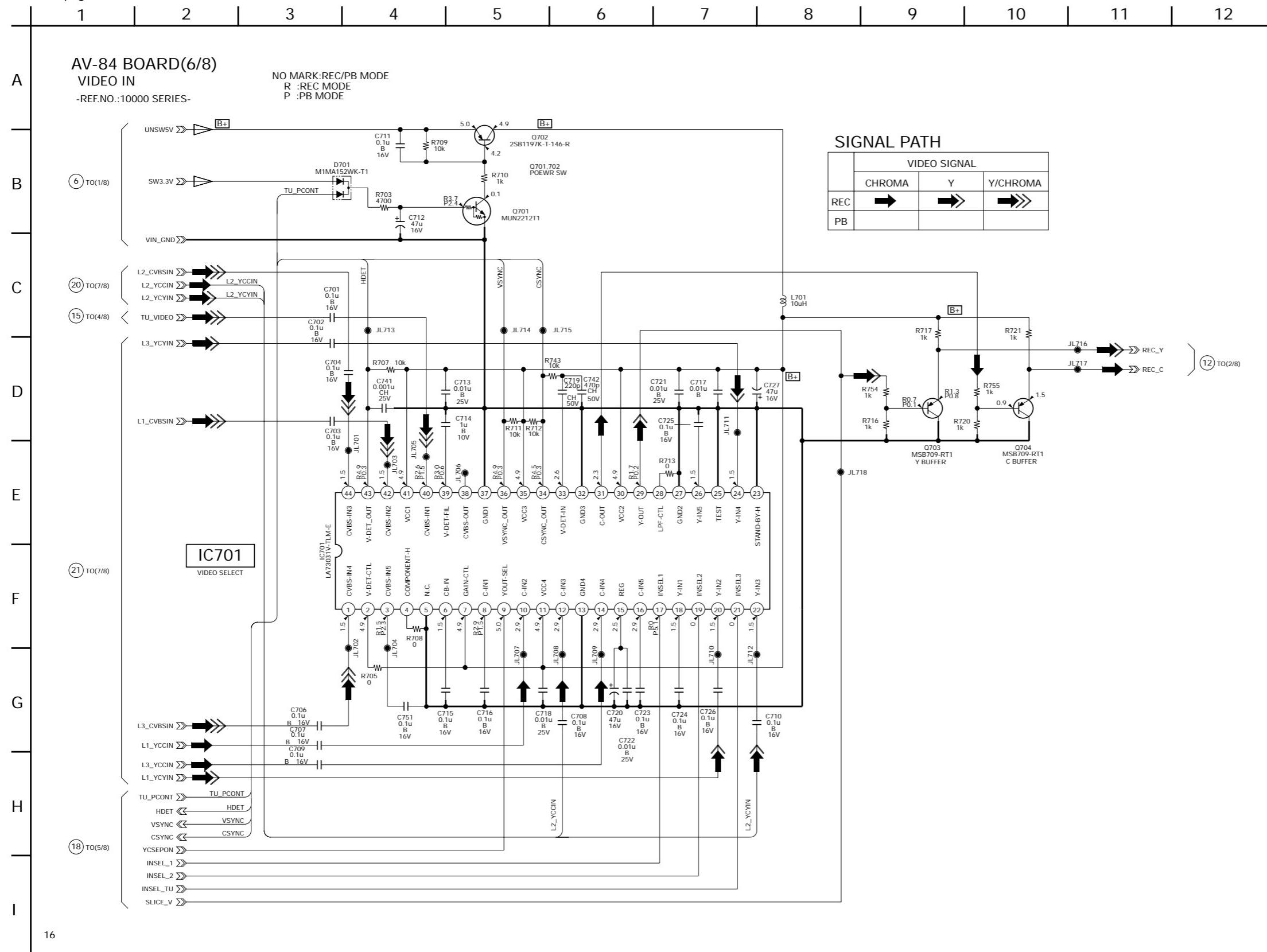
For Schematic Diagram

- Refer to page 4-4 for waveforms.



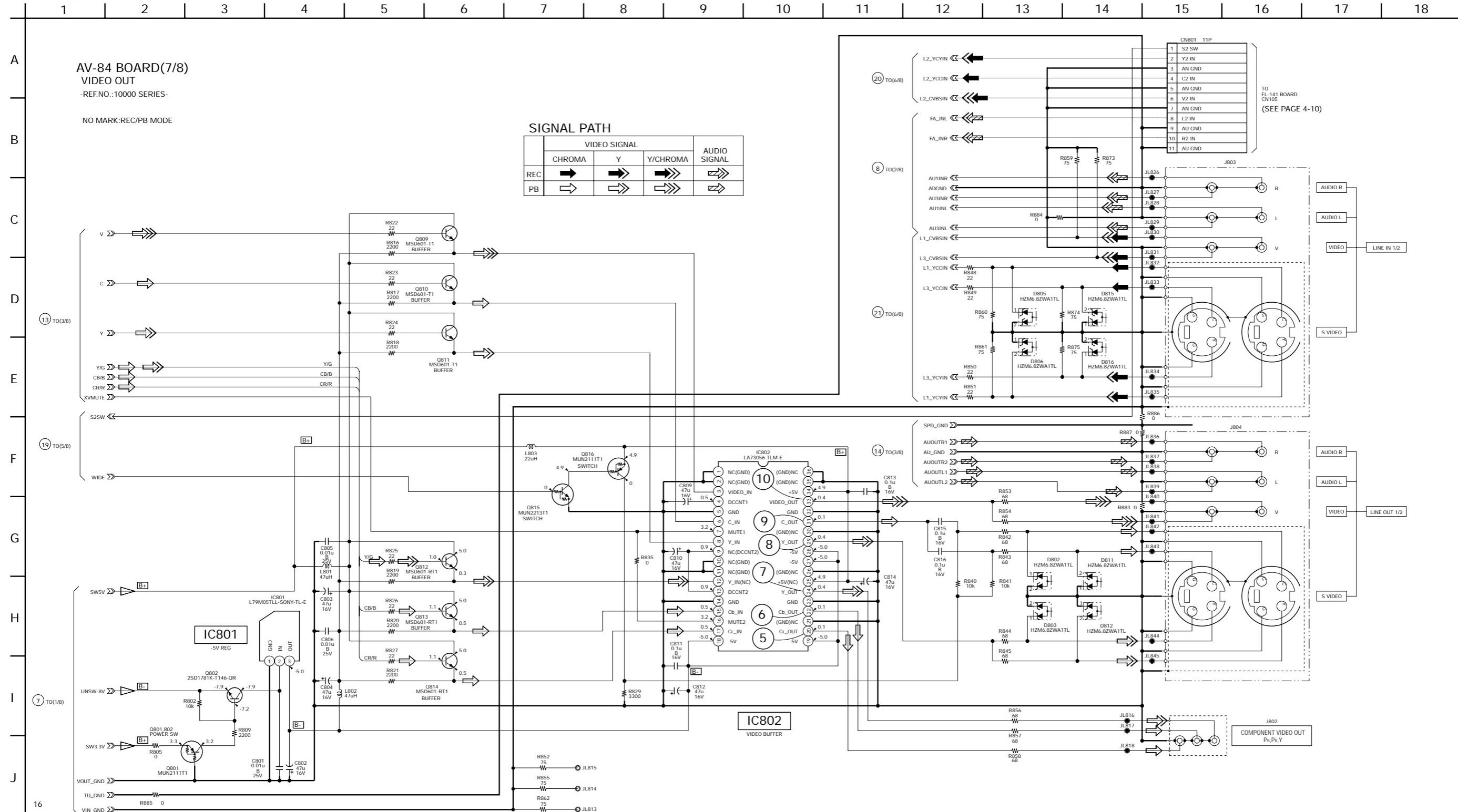
For Schematic Diagram

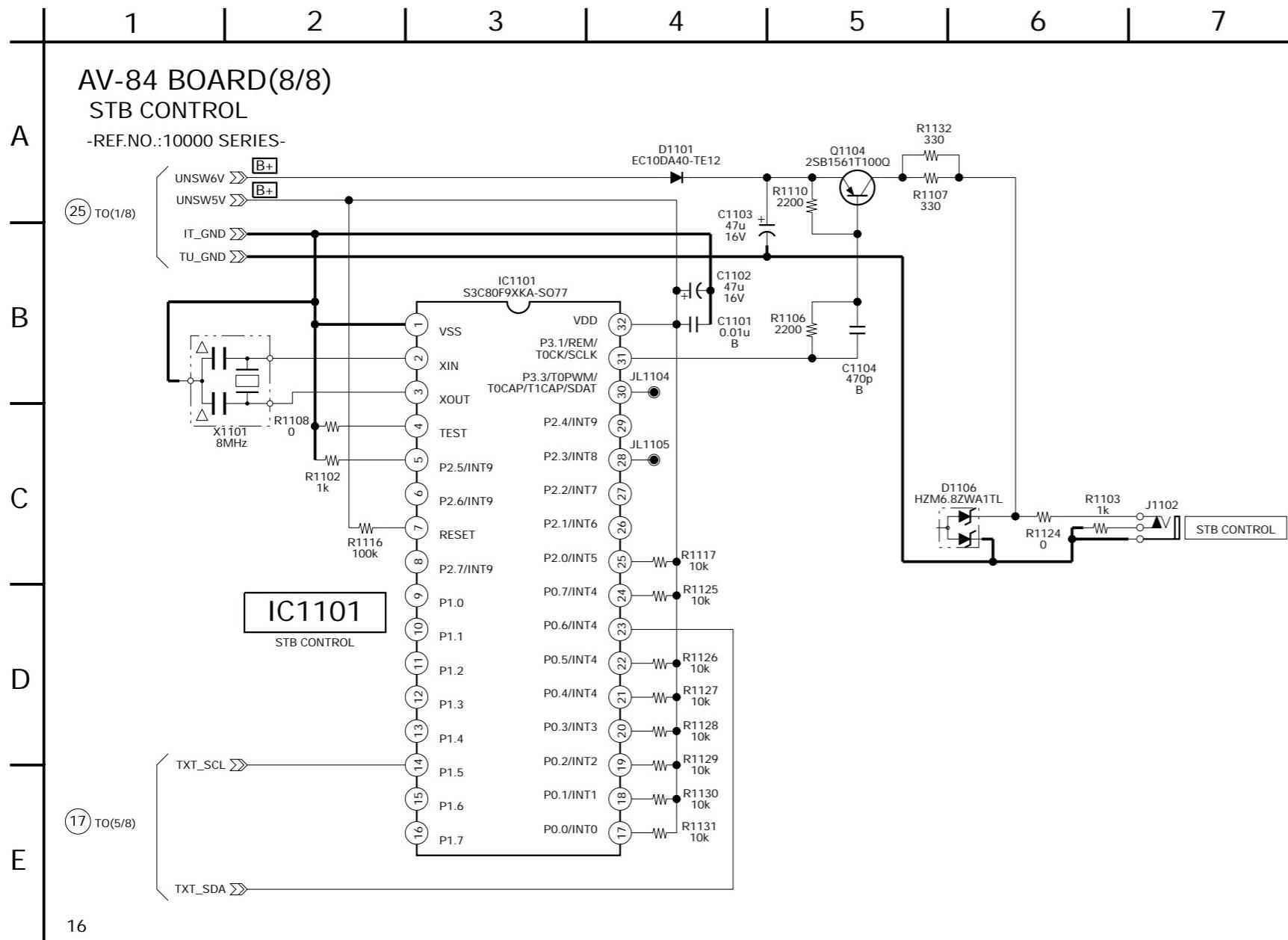
• Refer to page 4-4 for waveforms.

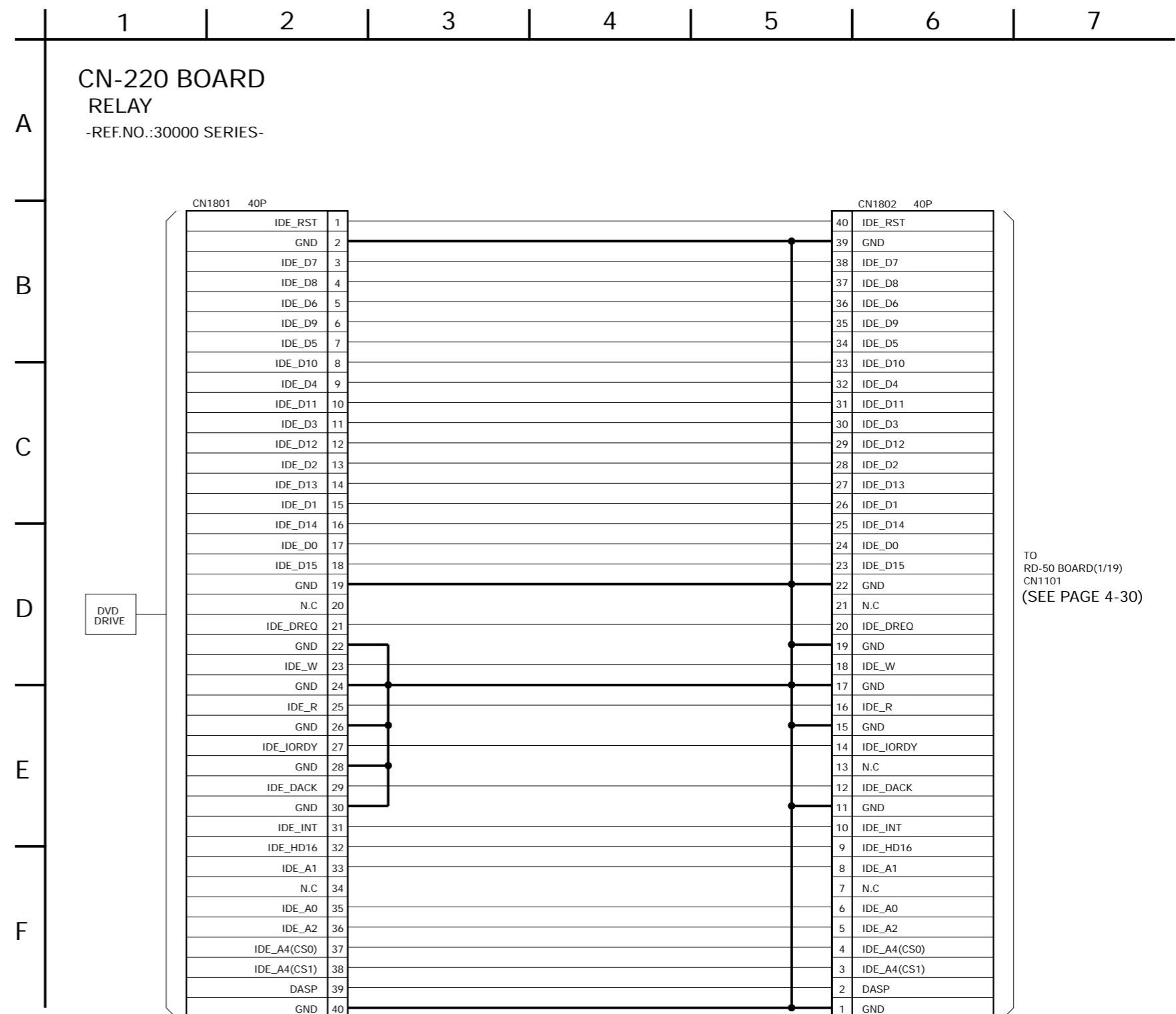


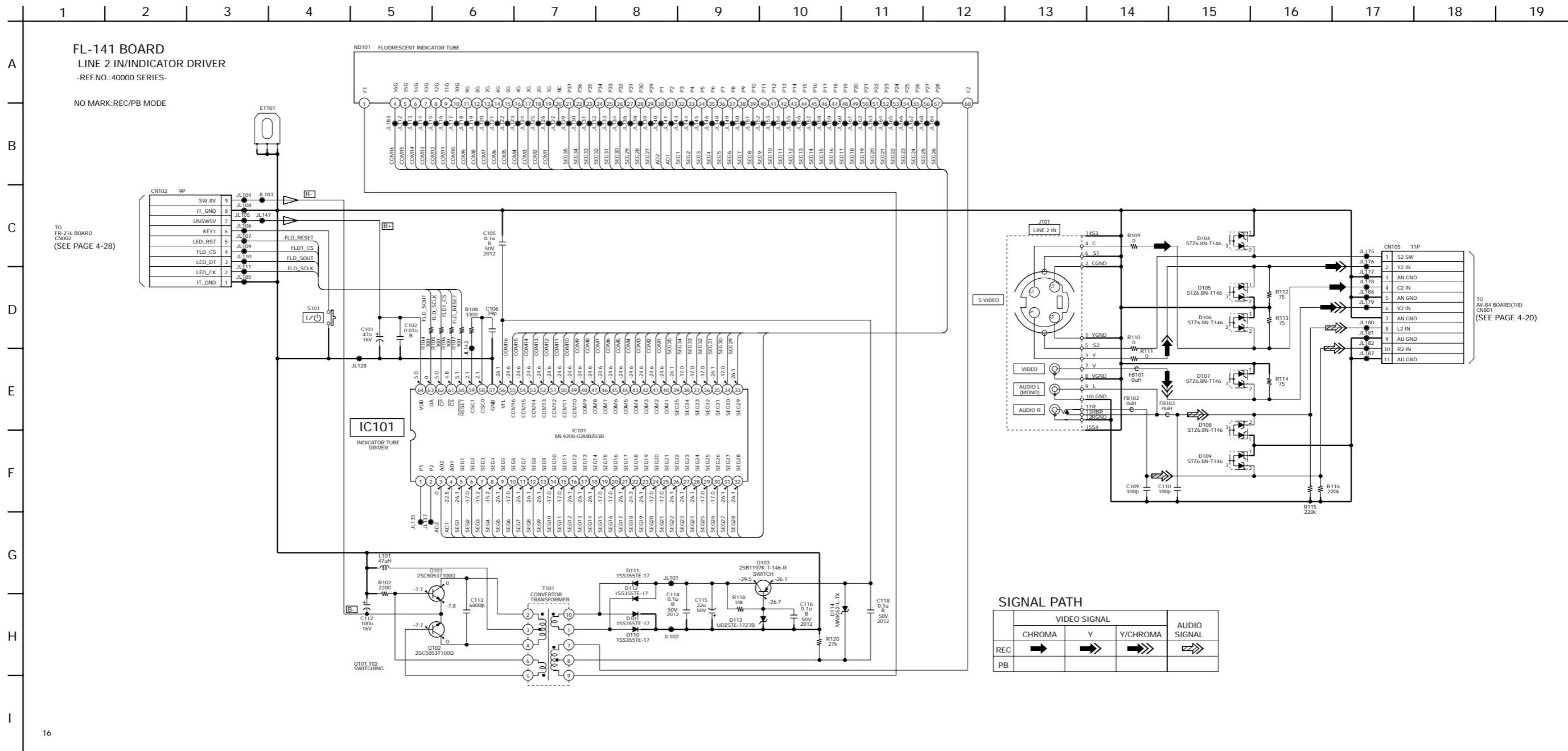
For Schematic Diagram

- Refer to page 4-4 for waveforms.







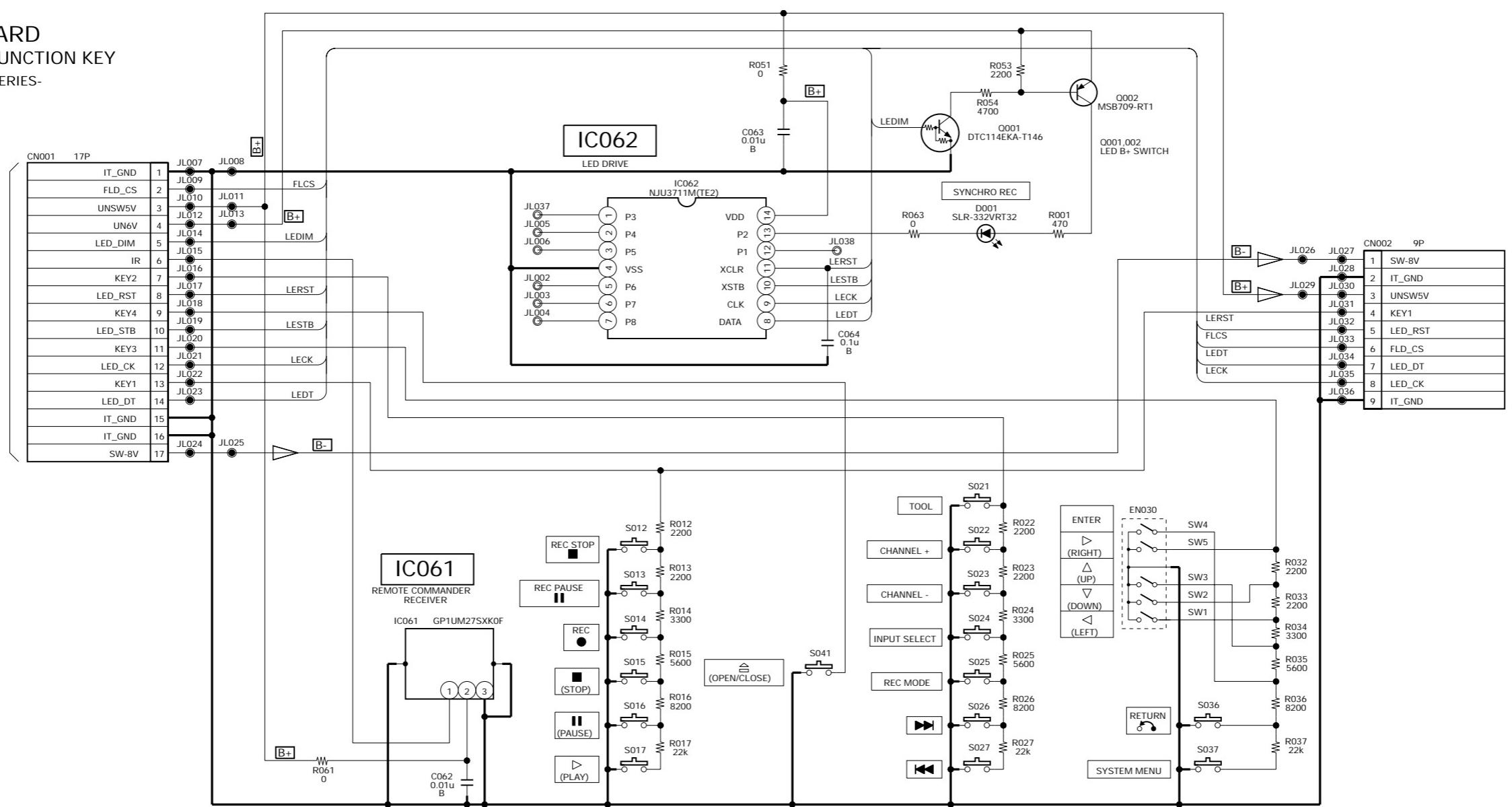


1 2 3 4 5 6 7 8 9 10 11 12 13

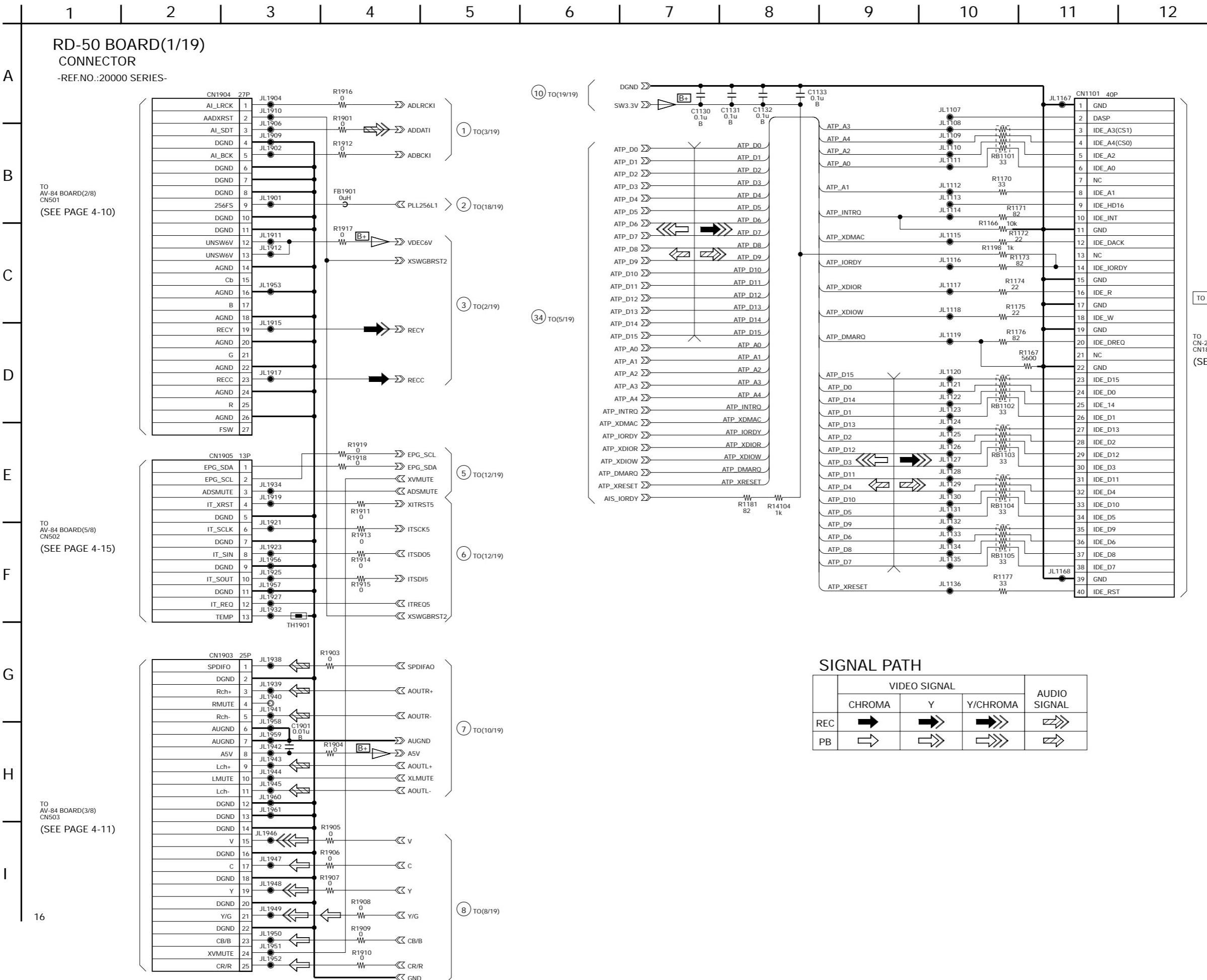
FR-216 BOARD
LED DRIVE,FUNCTION KEY
-REF.NO.:40000 SERIES-

TO
AV-84 BOARD(5/8)
CN603
(SEE PAGE 4-16)

TO
FL-141 BOARD
CN102
(SEE PAGE 4-25)

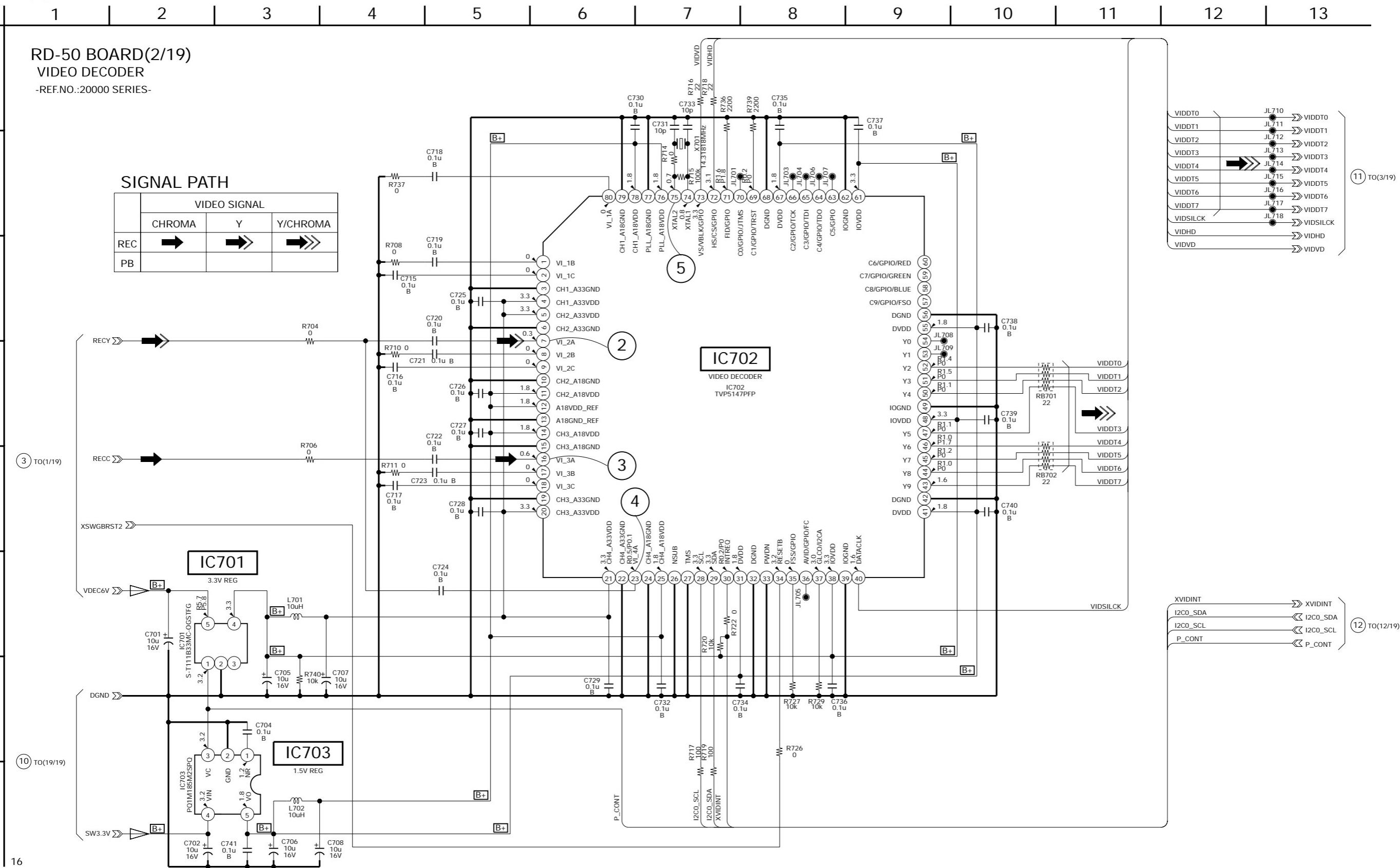


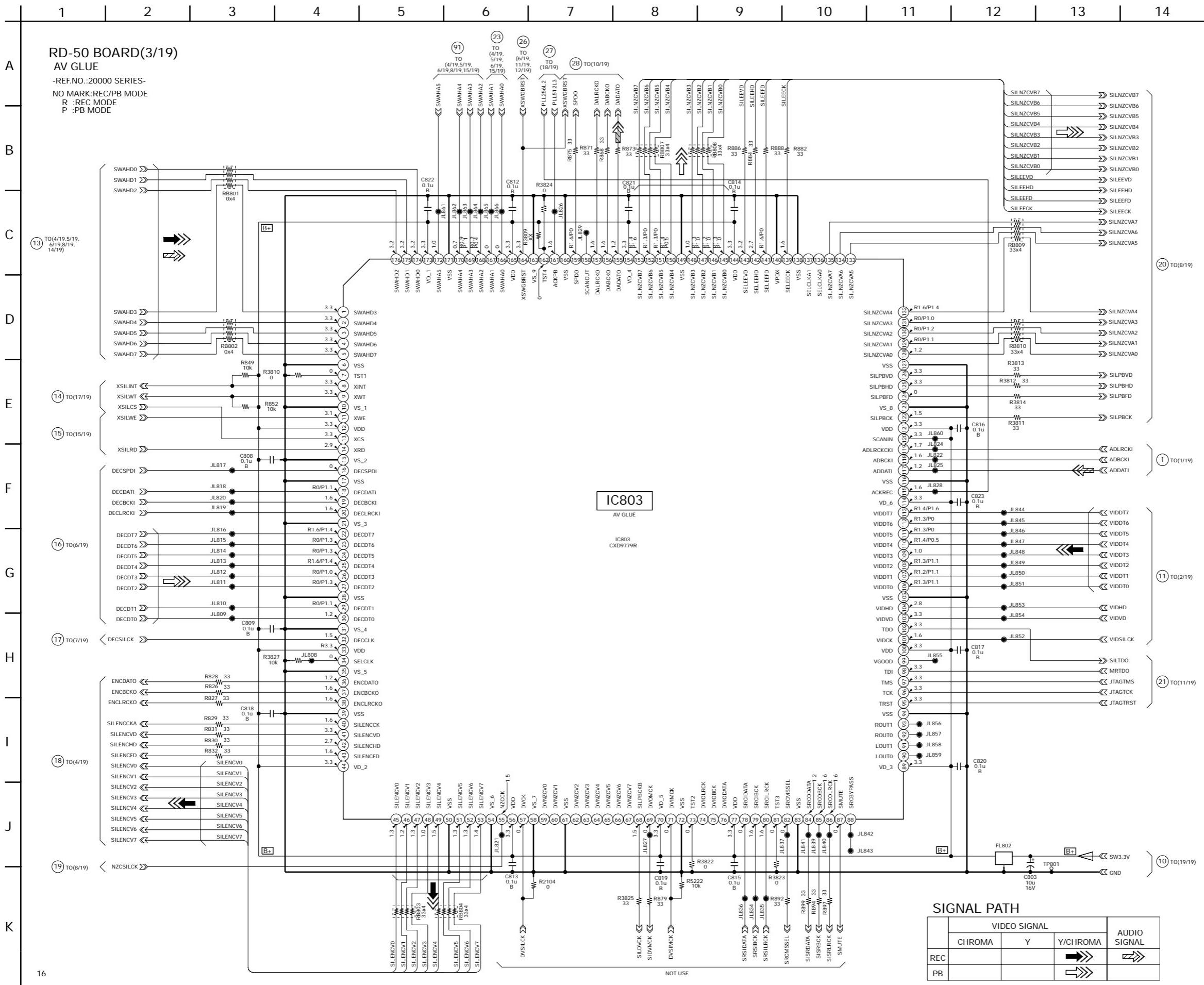
16



For Schematic Diagram

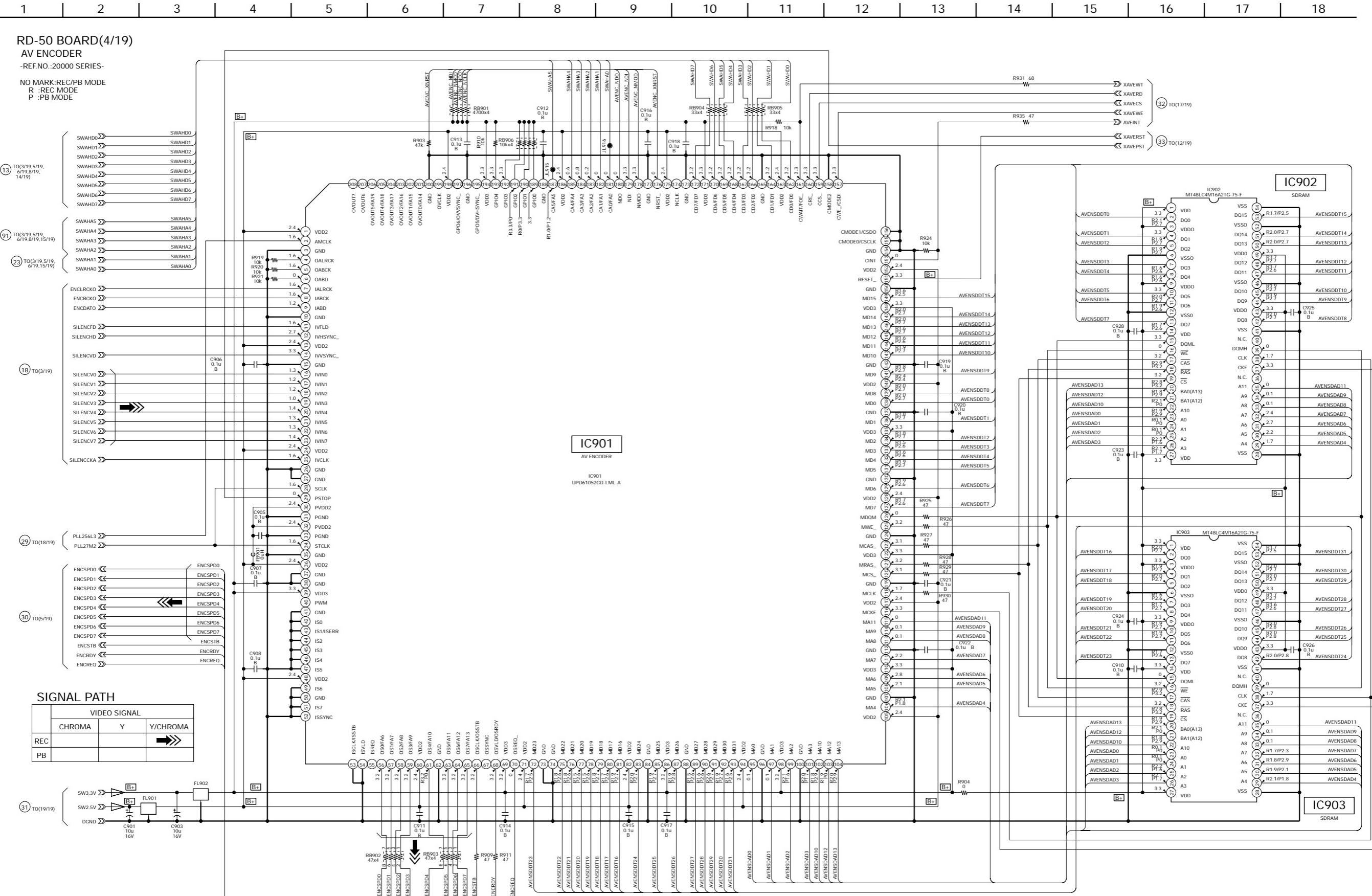
- Refer to page 4-5 for waveforms.

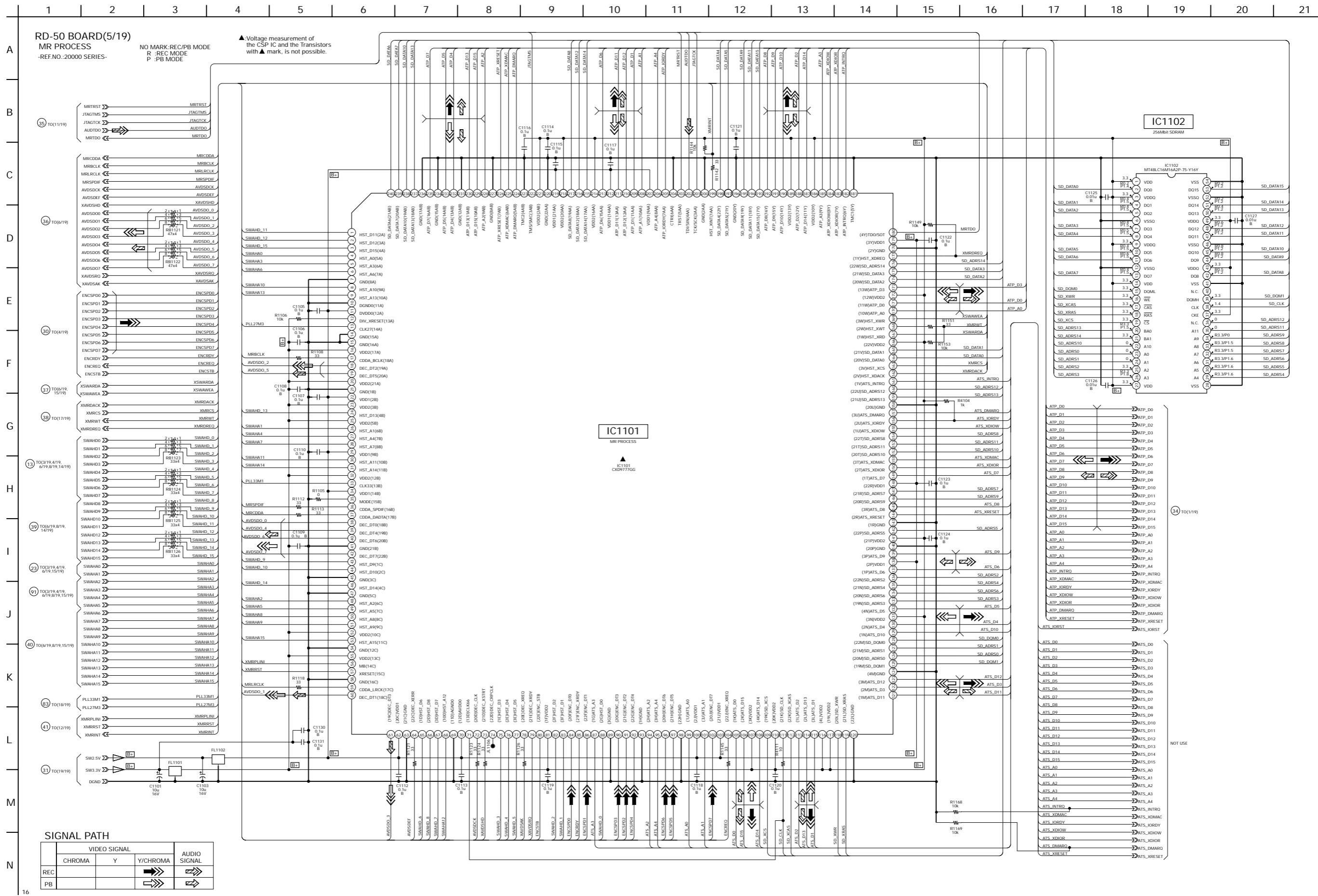




SIGNAL PATH

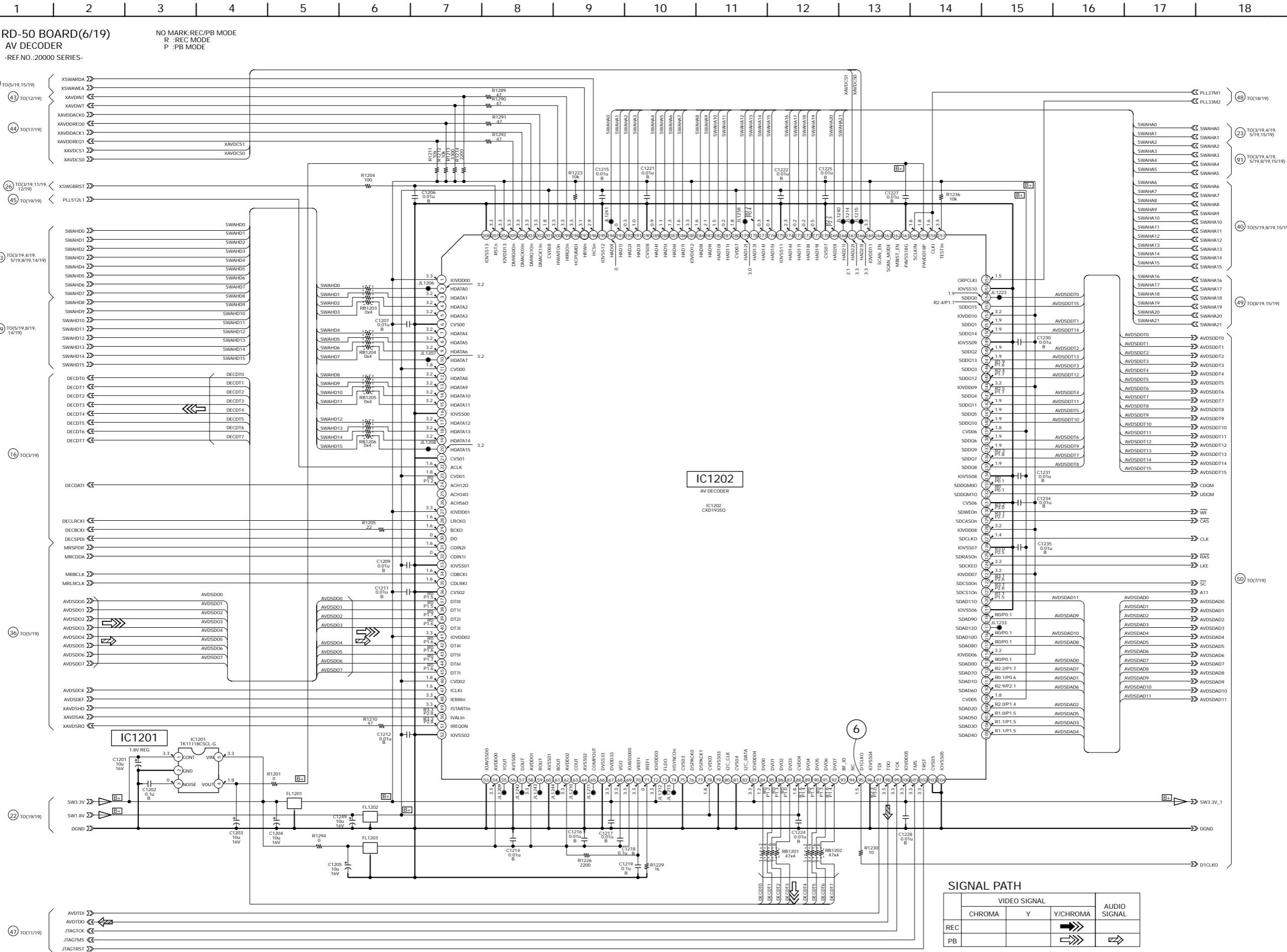
VIDEO SIGNAL			AUDIO SIGNAL
CHROMA	Y	Y/CHROMA	
REC			
PB			





For Schematic Diagram

• Refer to page 4-5 for waveforms.

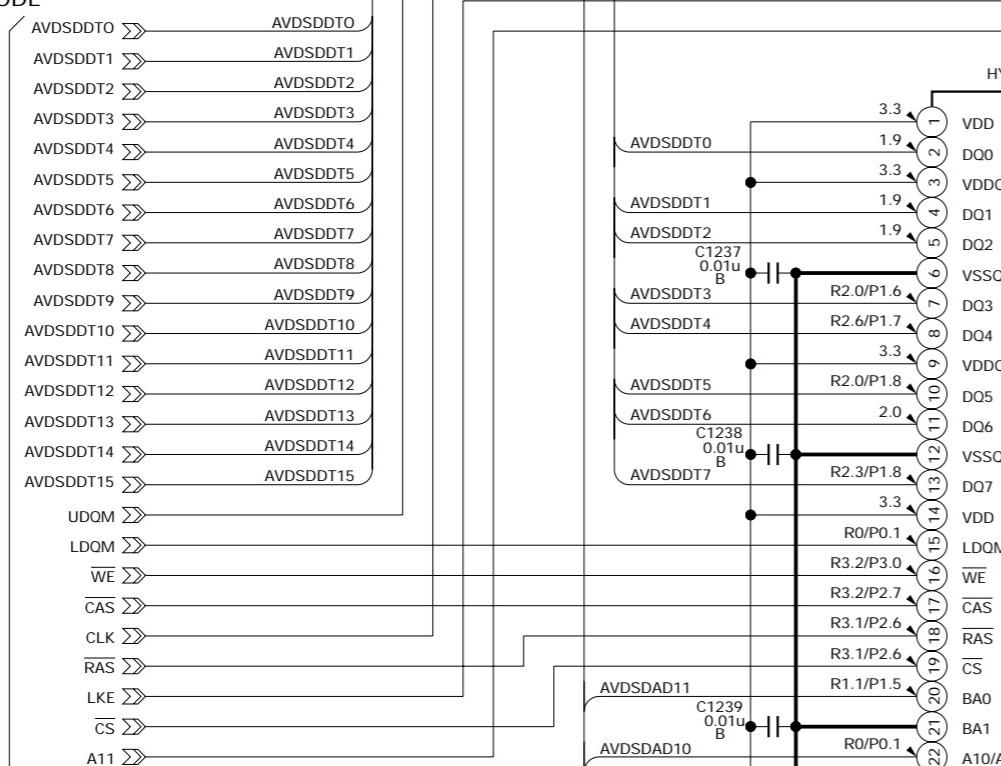


1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9

RD-50 BOARD(7/19)

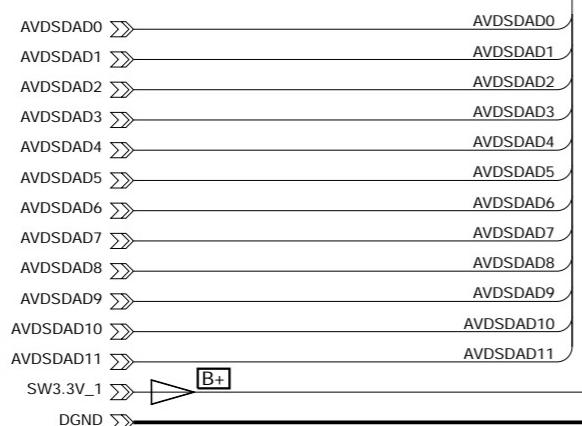
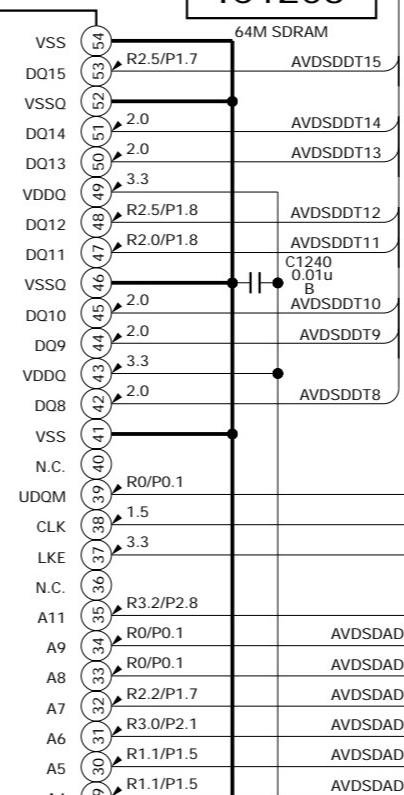
SDRAM
-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



(50) TO(6/19)

IC1203



IC1206

512fs

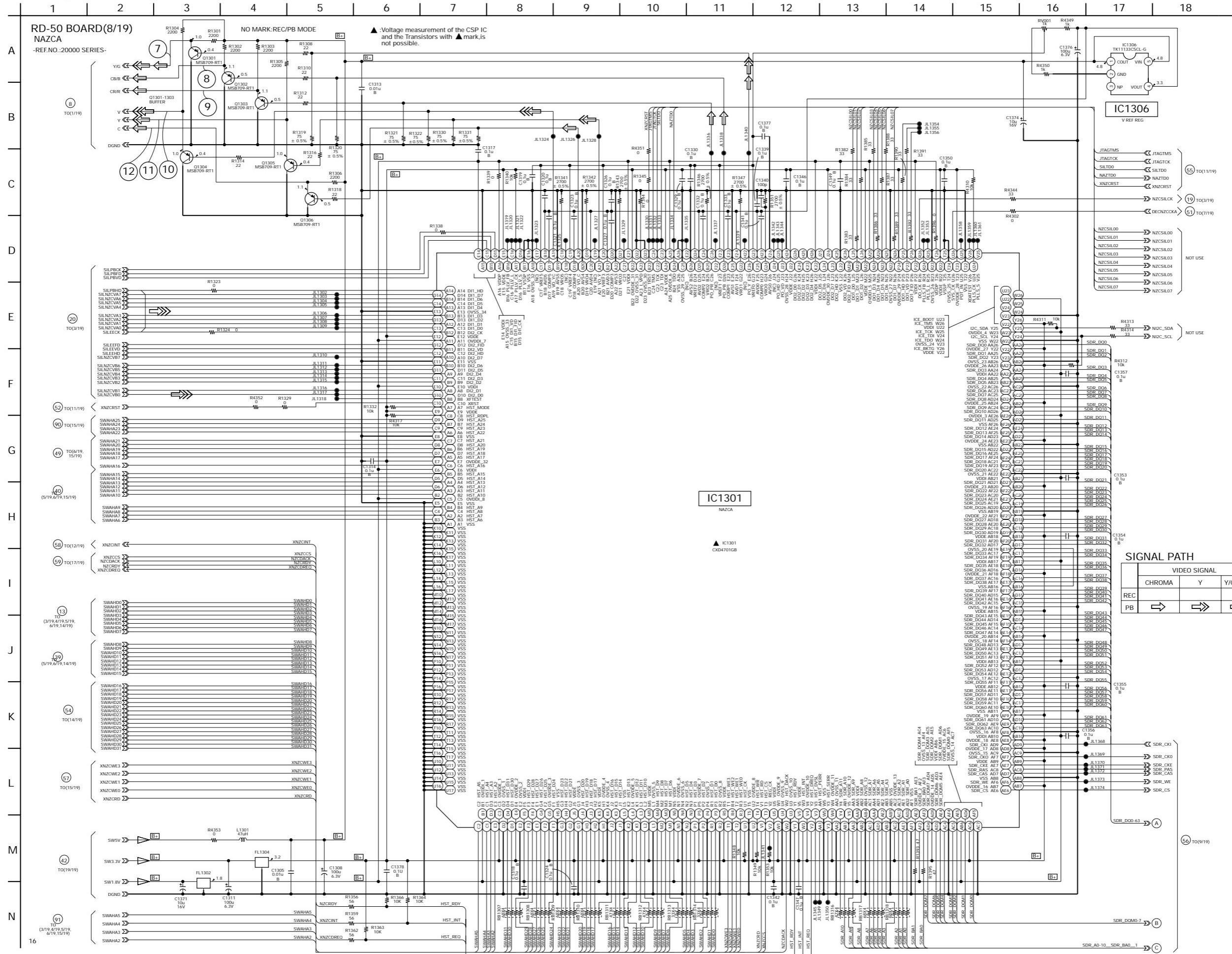
» DECNZCKA > (51) TO(8/19)

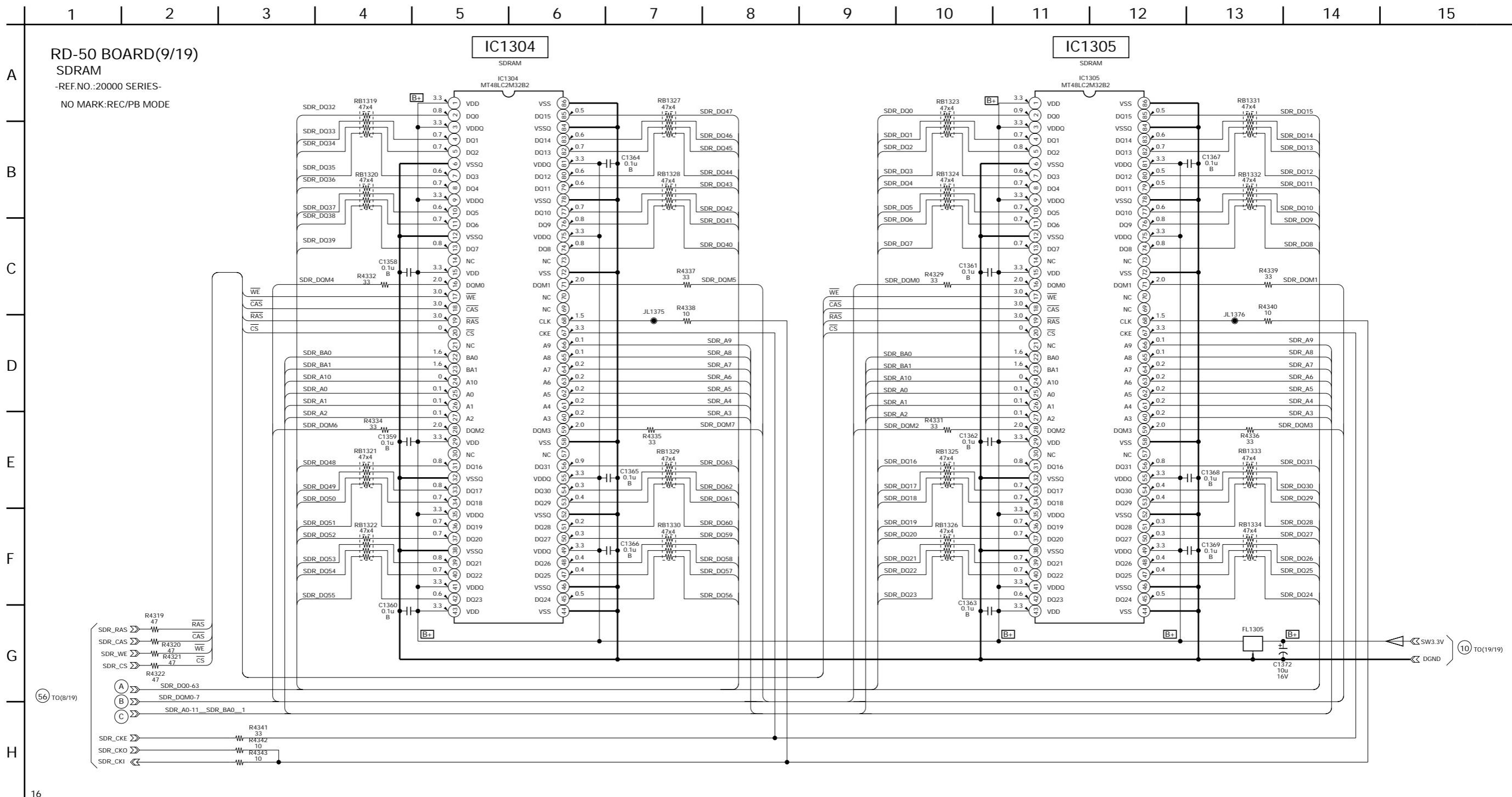
» DECSILCK > (17) TO(3/19)

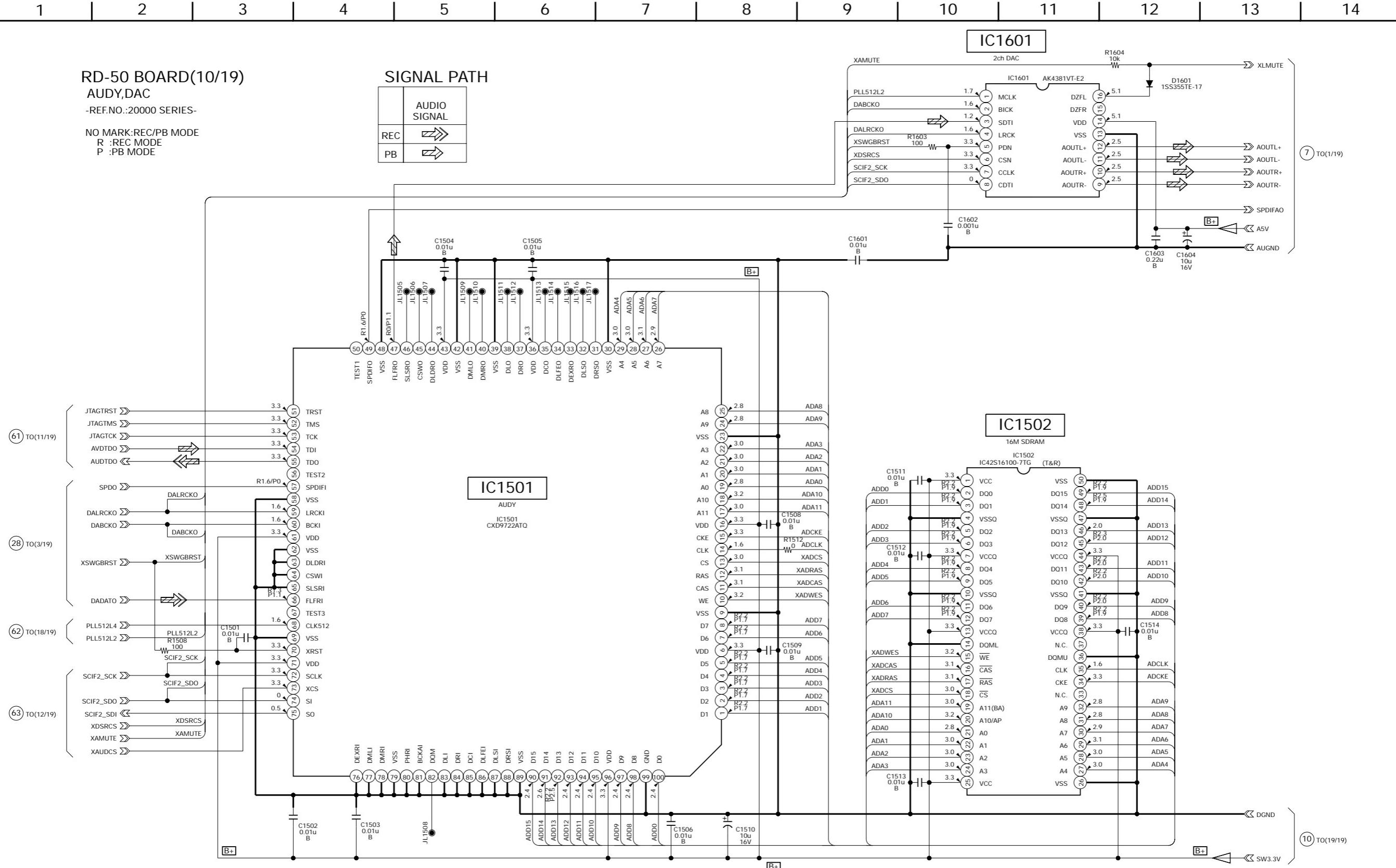
16

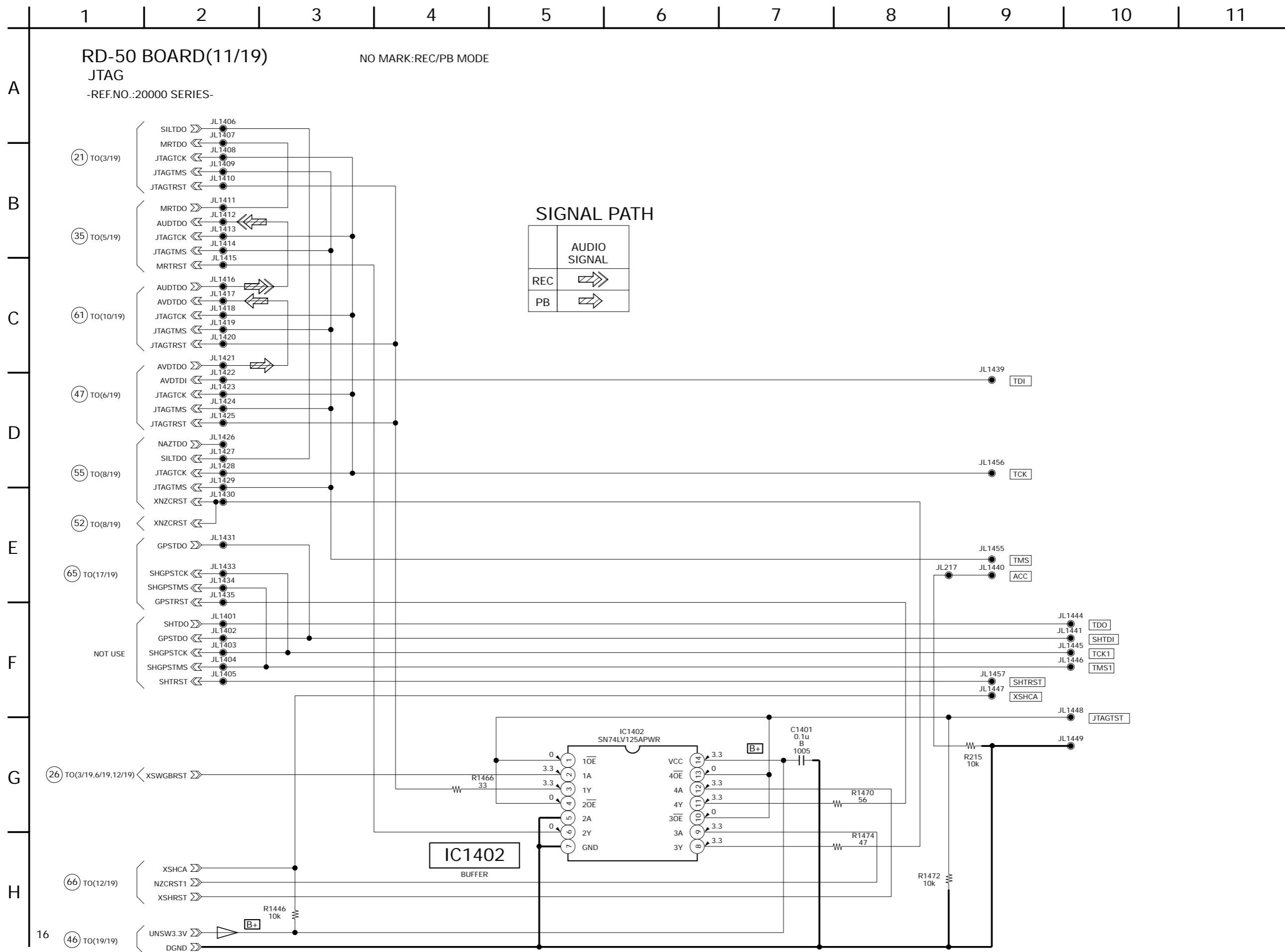
For Schematic Diagram

• Refer to page 4-5 for waveforms.



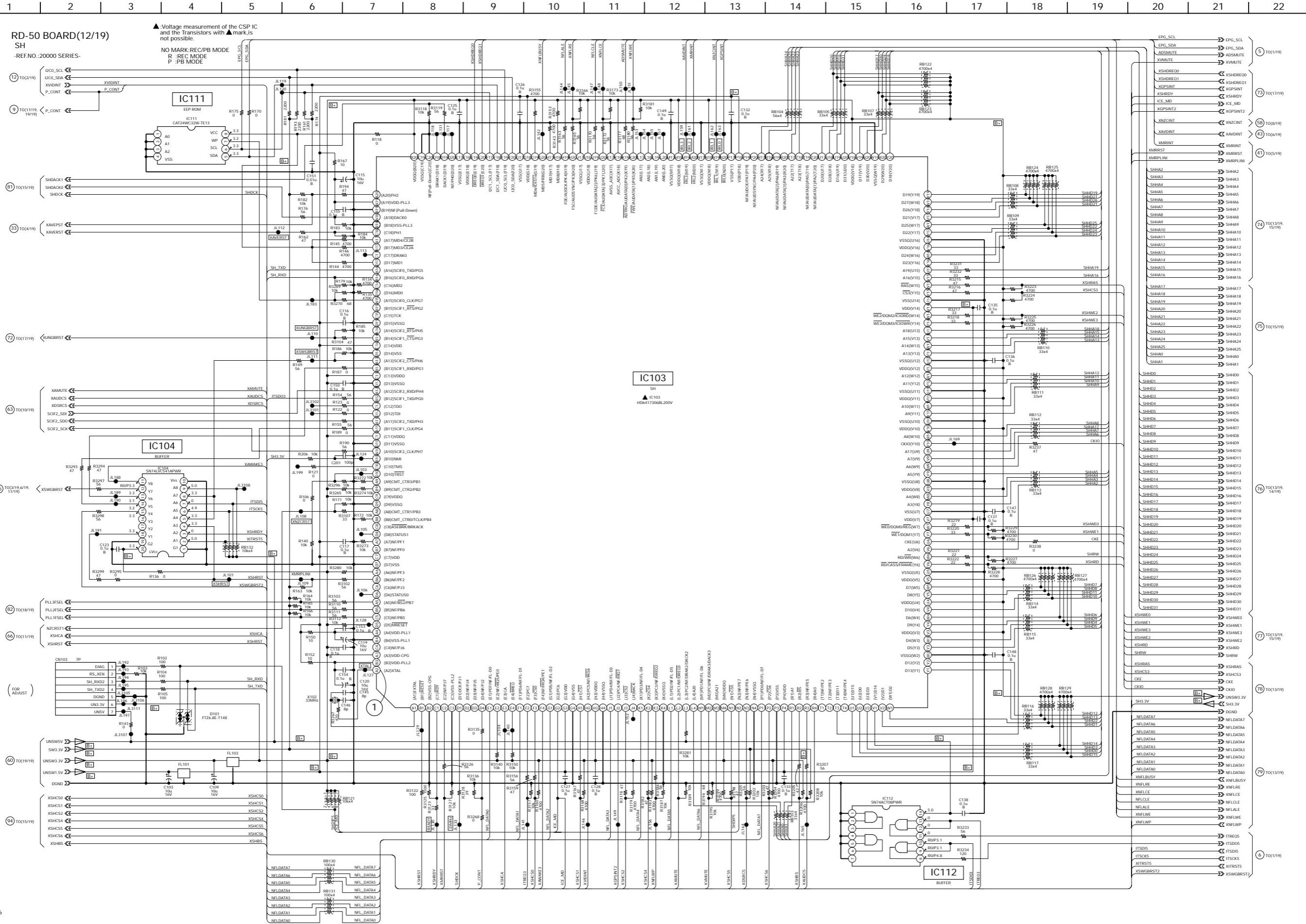


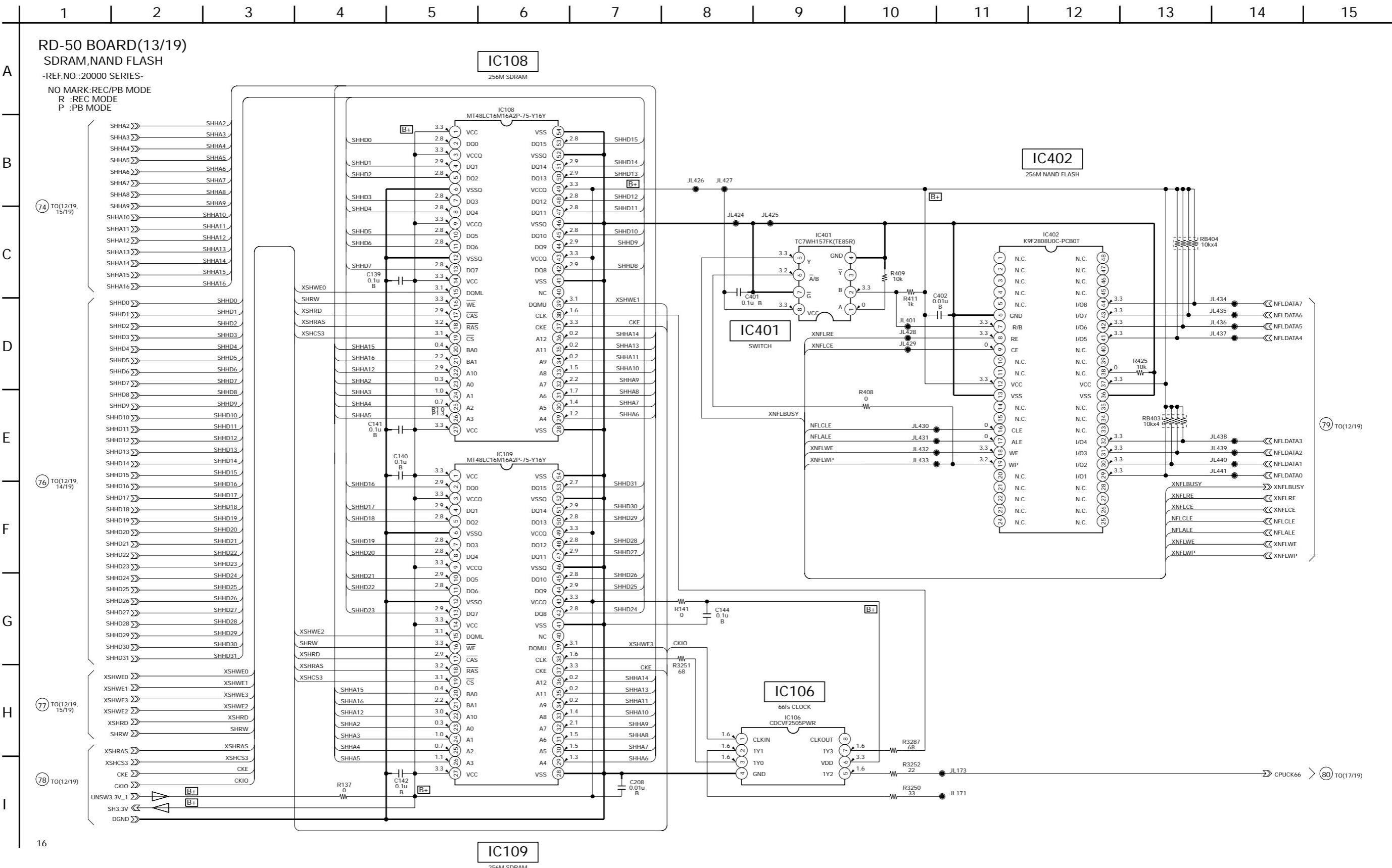


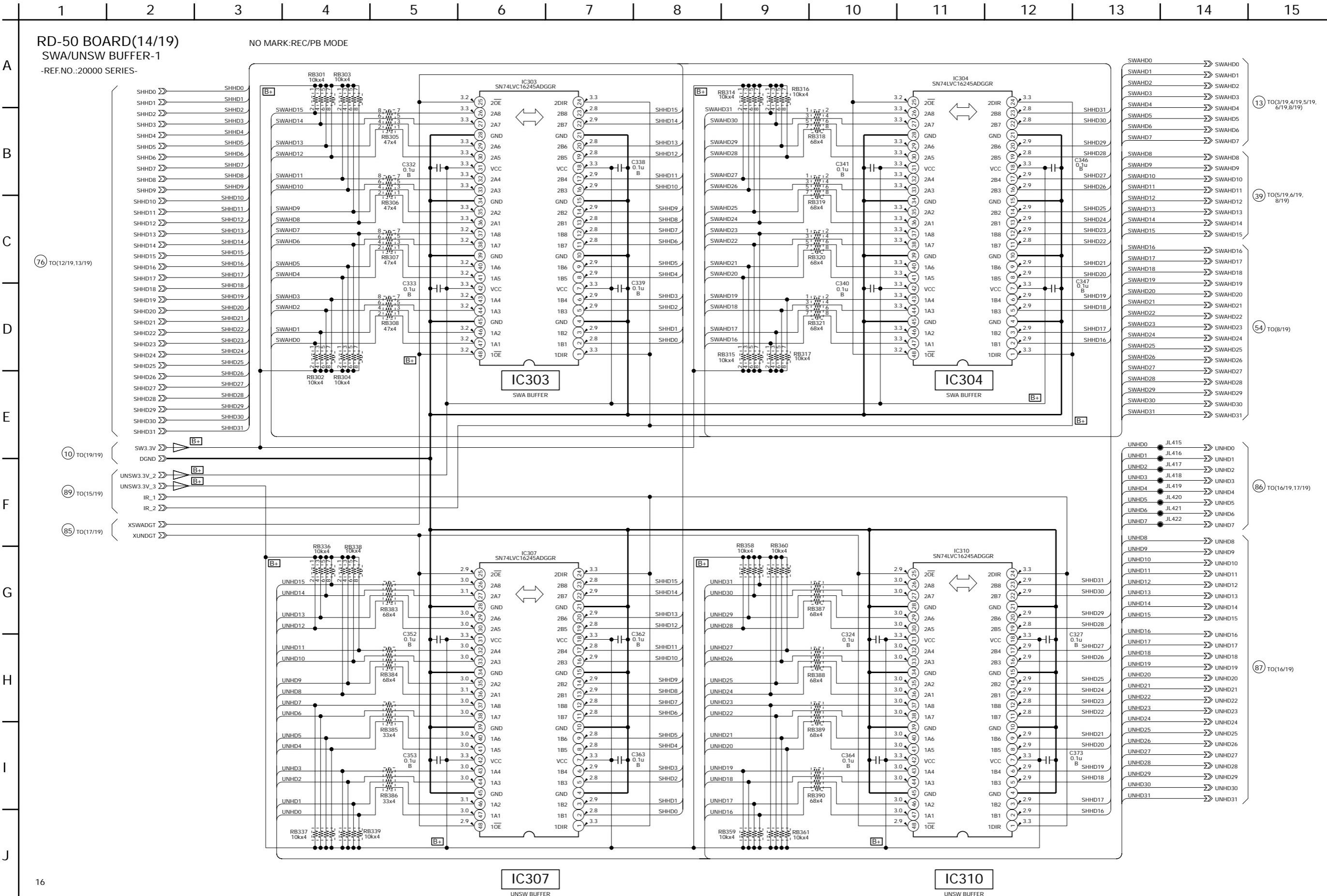


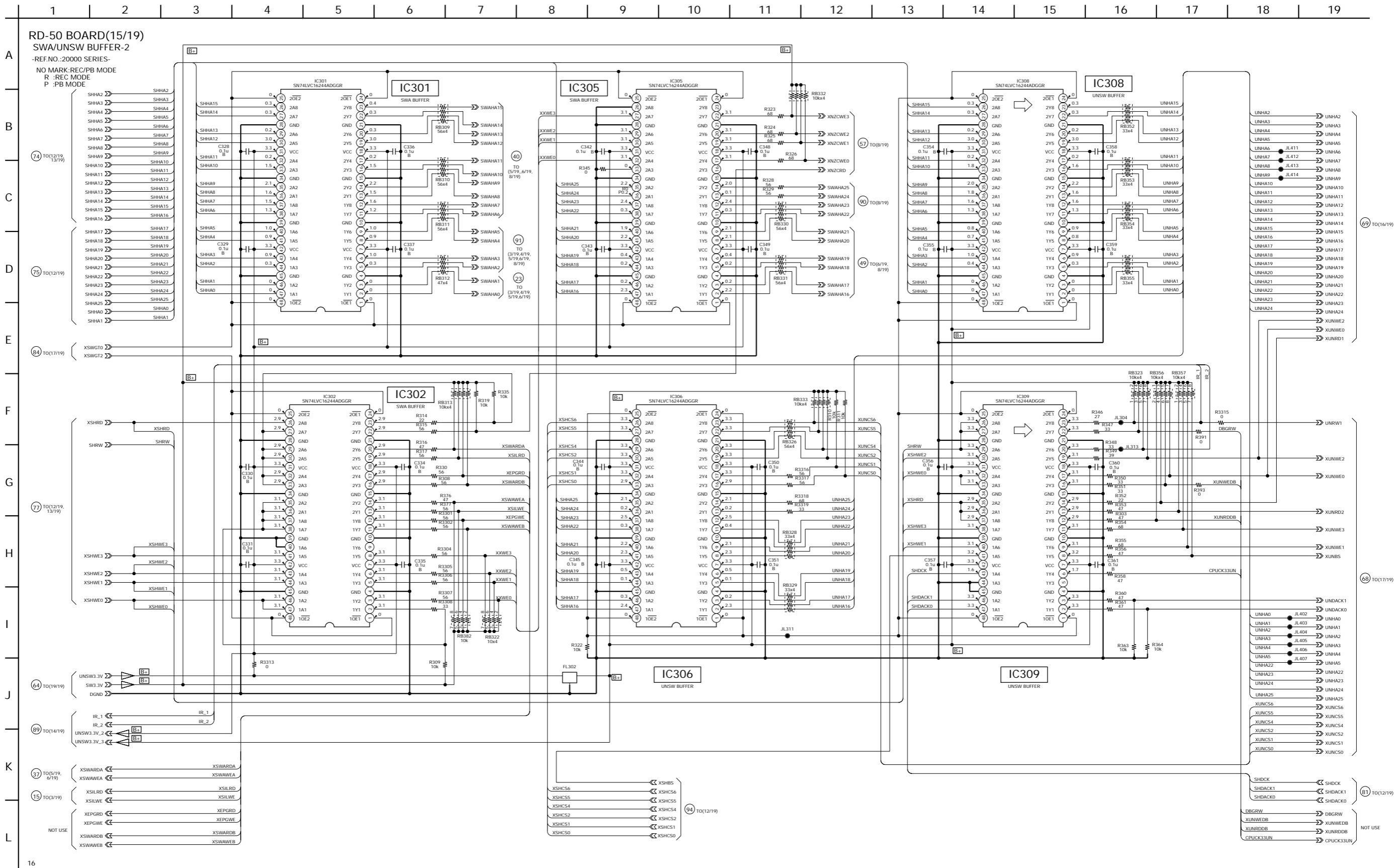
For Schematic Diagram

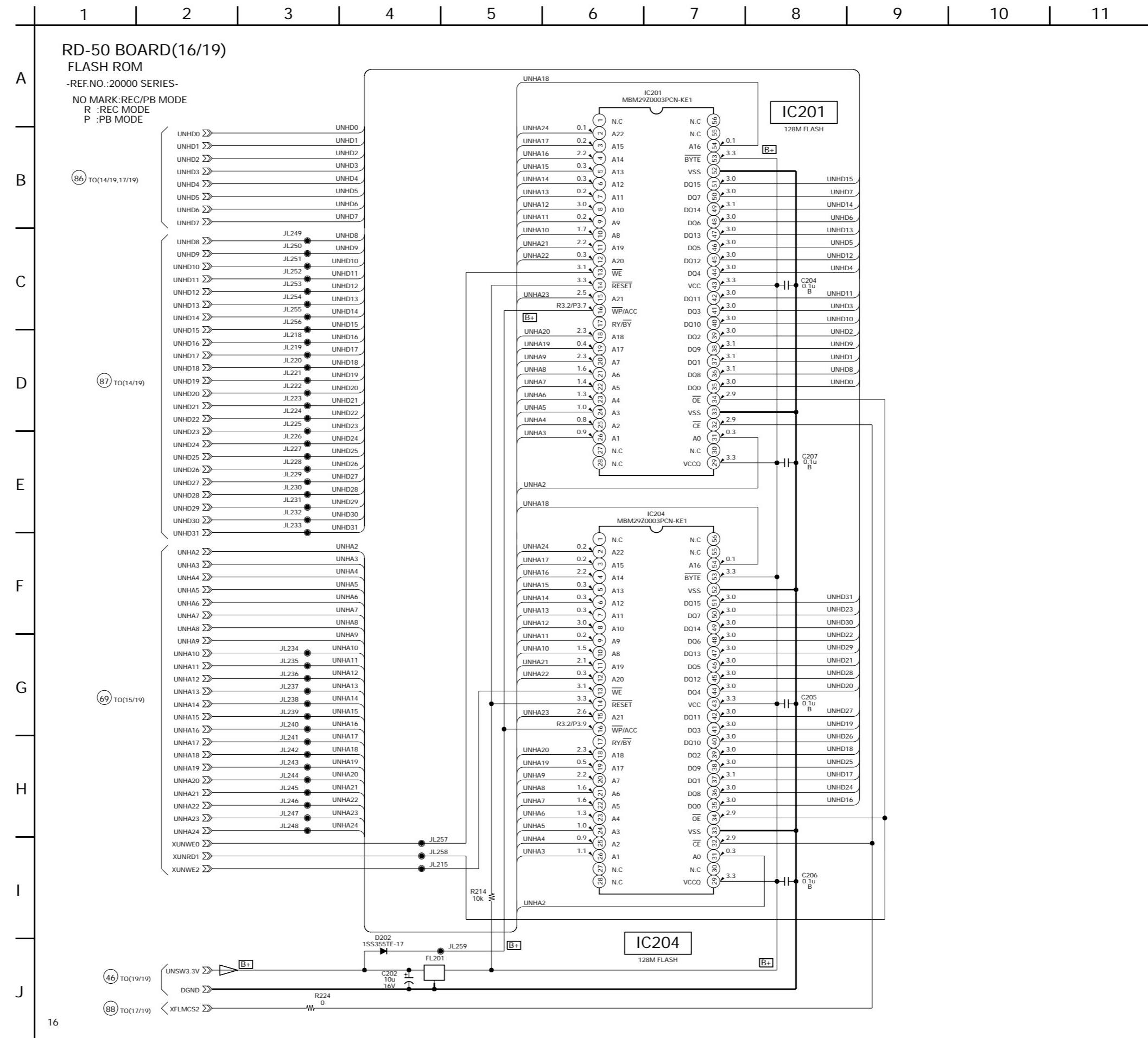
• Refer to page 4-5, 4-6 for waveforms.

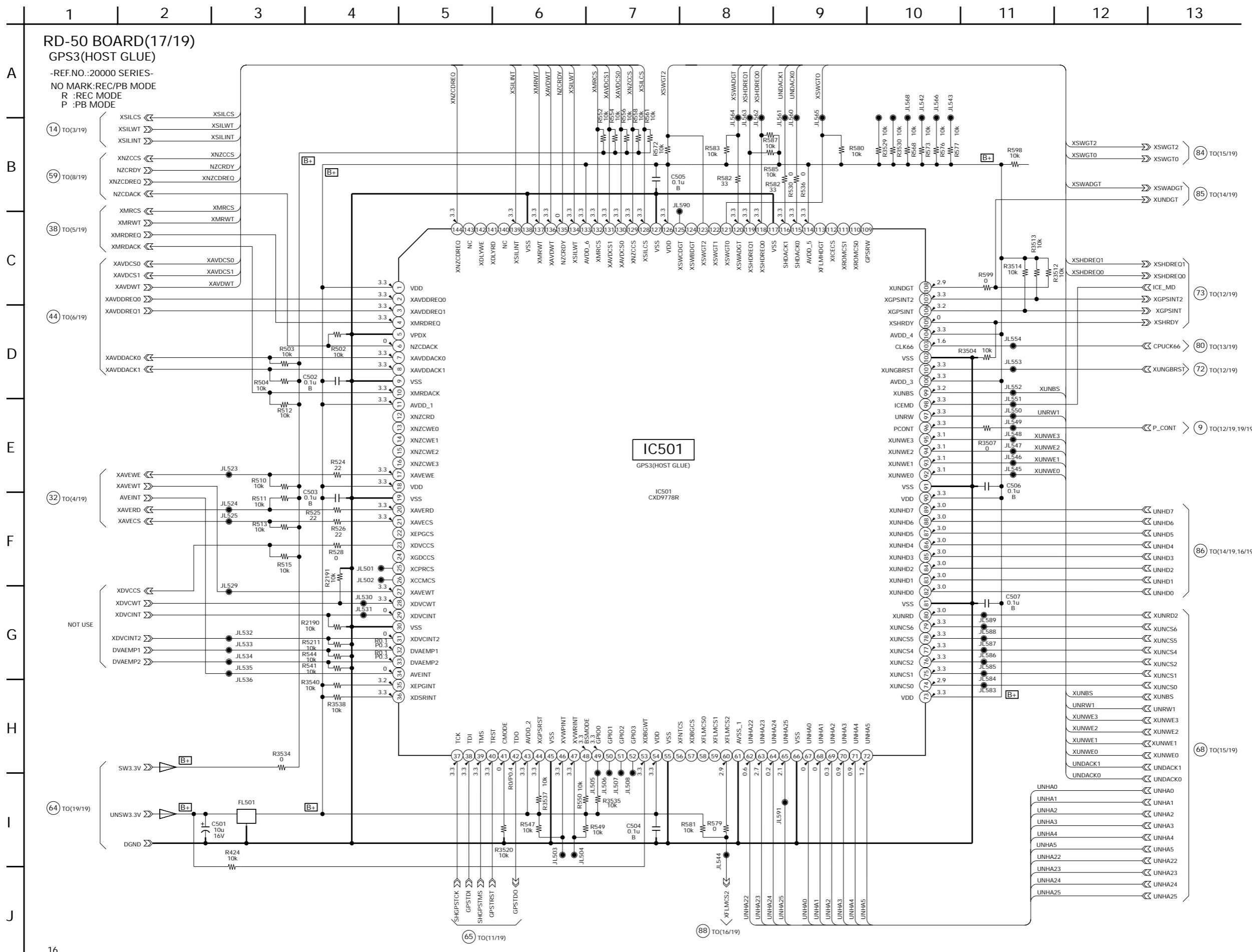






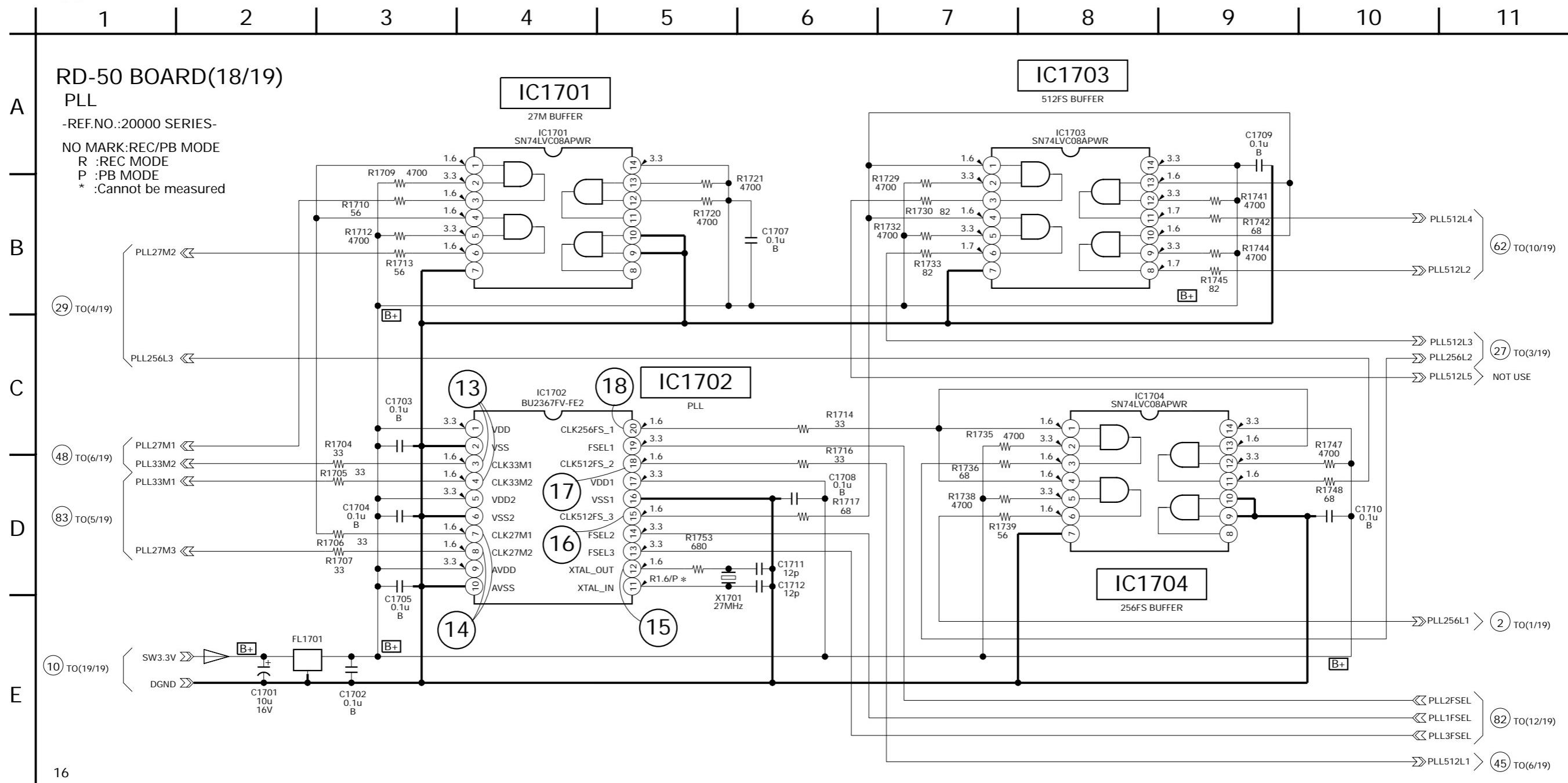


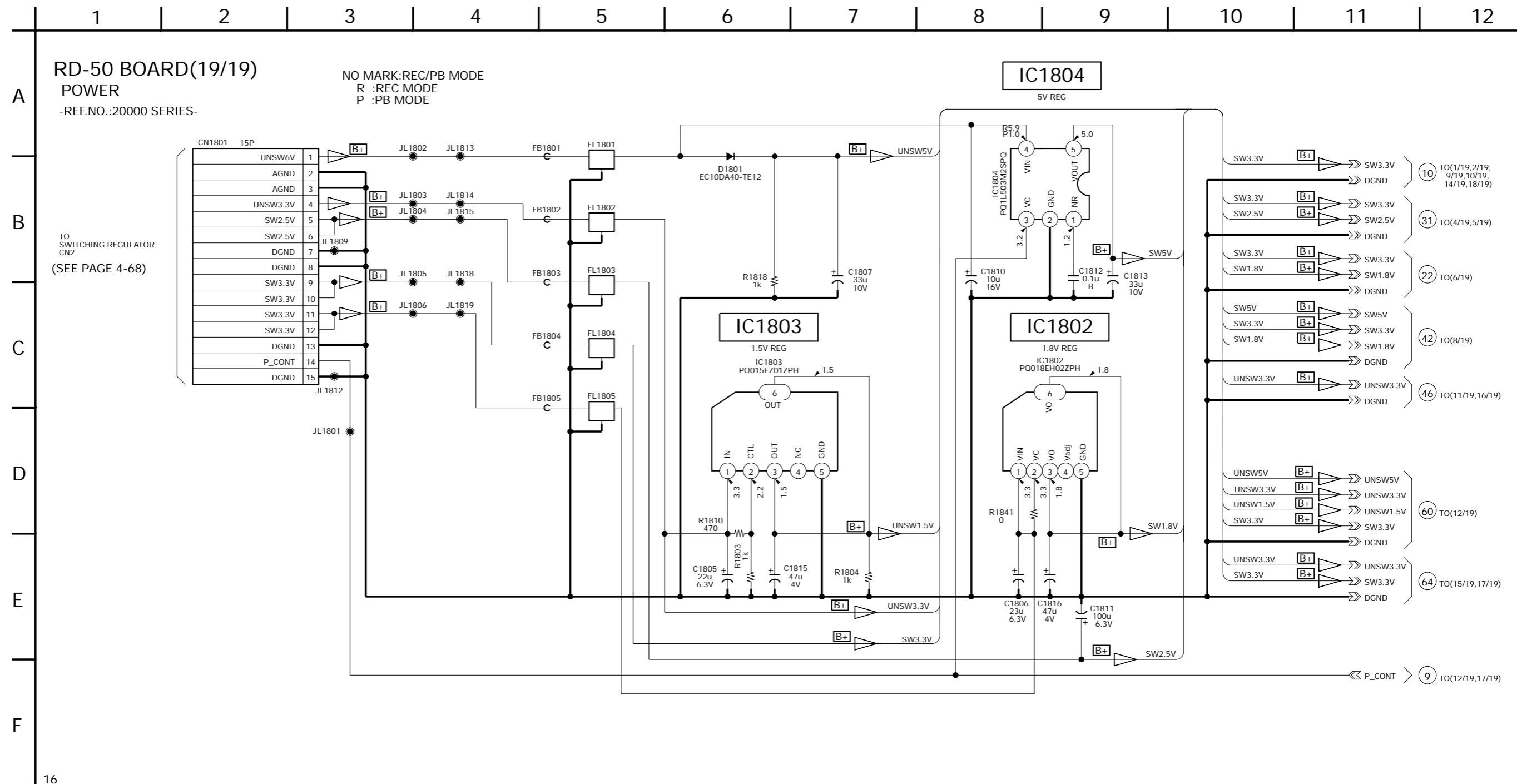


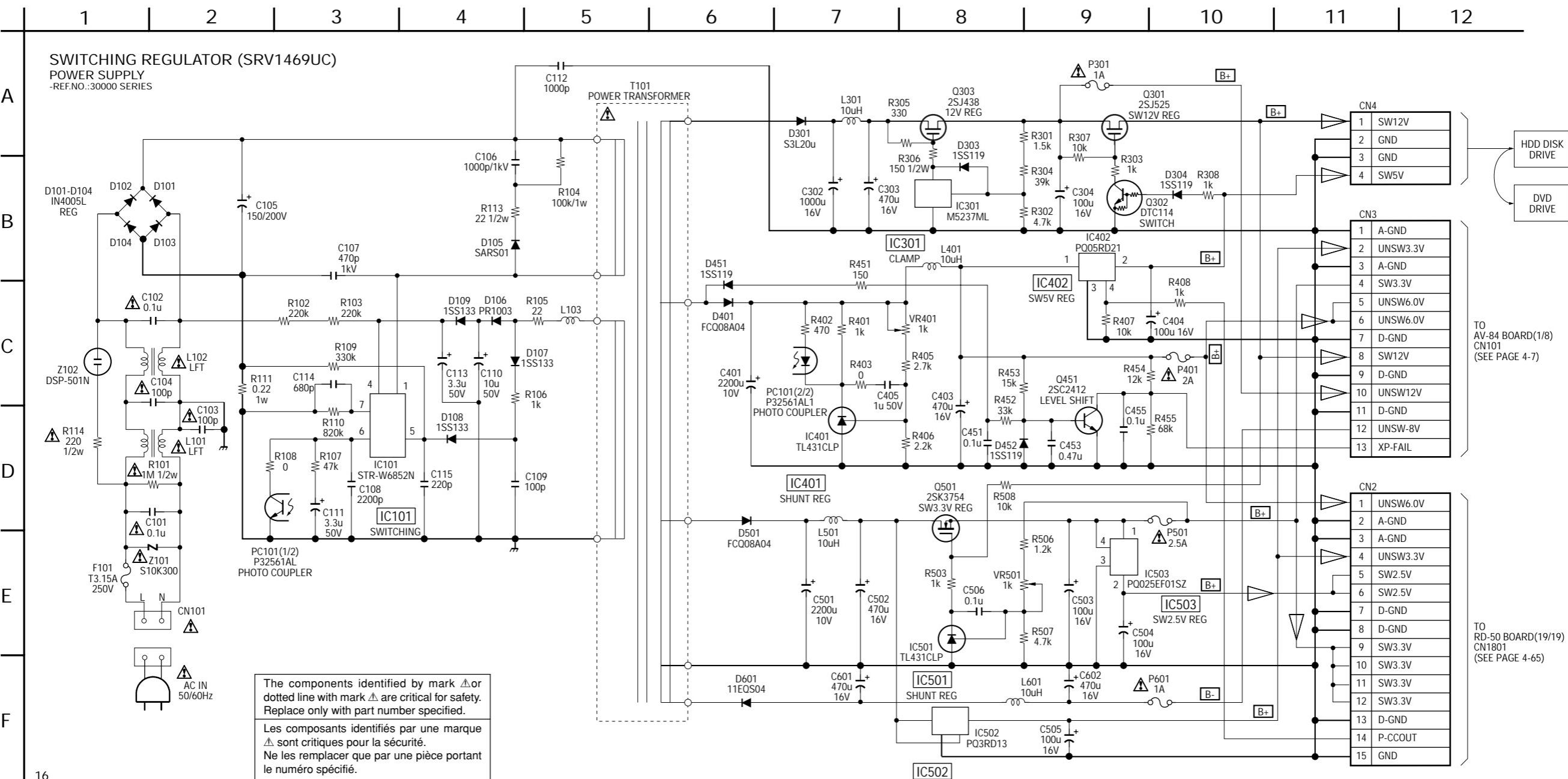


For Schematic Diagram

- Refer to page 4-5, 4-6 for waveforms.







SECTION 5

IC PIN FUNCTION DESCRIPTION

5-1. IT CONTROL IC (IC603: M603H2MC-511FPUO (AV-84 BOARD))

Pin No.	Pin Name	I/O	Function
1	TU_S/B_D	I	Tuner Stereo detection L: Stereo
2	SIRCS IN	I	Remote control signal input
3	JUSTCLK	I	Timer pulse input Fixed to digital GND
4	AV_LINK_IN	I	Not used
5	CSYNC	I	Composite sync signal input
6	FAN_DET	I	Fan rotation control at power ON, L: Fan rotating, H: Fan stopped
7	BYTE	-	Fixed to digital GND
8	CNVSS		Connected to VCC when the FLASH is overwritten
9	XCIN	I	32KHz oscillator input
10	XCOUNT	O	32KHz oscillator output
11	XRESET	I	Reset signal input
12	XOUT	O	10 MHz oscillator output
13	VSS	-	Digital GND
14	XIN	I	10 MHz oscillator input
15	VCC	-	Analog power 6 V
16	XNMI	I	Analog power 6 V
17	SYNC_V	I	V sync signal detection
18	IT_REQ	I	Signal input for communication request from HOSTIC
19	SLICEON_IN	I	Signal input during slicer operation
20	N.C.	O	Fixed to digital GND
21	LED DIMMER	O	Signal output for LED dimmer pulse
22	AREA1	I	Destination input 1
23	BUZZER	O	Fixed to digital GND
24	N.C.	-	Fixed to digital GND
25	STB_CNT	-	Fixed to digital GND
26	AREA0	I	Destination input 0
27	AV_LINK_OUT	O	Fixed to digital GND
28	TXT_SCL	-	Fixed to digital GND
29	TXT_SDA	-	Fixed to digital GND
30	VSS2	-	Fixed to digital GND
31	LP2	O	Filter signal output 1 (For Fsc)
32	LP3	-	Filter signal output
33	LP4	O	Filter signal output 1 (For PDC)
34	VDD2	-	Backup power 5 V
35	M2	-	
36	M1	-	Fixed to digital GND
37	SLICEON	O	Slicer operation detection H: Operating
38	ITSOUT	O	Data signal output (HOST / overwriting FLASH by dedicated writer)
39	ITSIN	I	Data signal input (HOST / overwriting FLASH by dedicated writer)
40	ITSCLK	O	Clock signal output for host communication
41	H/B	I	DVD/HDD judge signal input
42	FLD_DATA	O	SO signal output for FLD
43	FLD_IN	I	Fixed to digital GND
44	FLD_CLK	O	SCLK signal output for FLD
45	EPG SW1	-	
46	EPG SW2	-	
47	LED_STB	O	Strobe signal output for FLD drive
48	FL_PCONT	O	Power control signal output of D/DCONV for FLD H: ON, L: OFF
49	FLD_XRESET	O	Reset signal output for FLD drive H: NORMAL, L: RESET
50	FLD_CS	O	Chip select signal output for FLD drive

Pin No.	Pin Name	I/O	Function
51	TXT_EN	O	
52	SYNC_C_SW	O	Fixed to digital GND
53	SYNC_S/V_SW	O	LIS/V switching signal while waiting for synchronized recording Analog power 6 V
54	TU_FMONO	O	Forced monaural signal output / clock adjustment 1 KHz output
55	RESET_5V	O	RESET 5 V signal output
56	IT_XRESET	O	Reset signal output to HOST (SH)
57	TU_SCL	O	IIC clock output for tuner
58	TU_SDA	I/O	IIC data input/output for tuner
59	EEP_XWP	O	EEPROM write-protect output L: Write-protected
60	EEP_SCL	O	IIC clock output for EEPROM
61	EEP_SDA	I/O	IIC data input/output for EEPROM
62	XMENTMUTE	-	
63	N.C.	-	Fixed to digital GND
64	BS_BIT_SW	I	BSBIT output terminal cable presence/absence detection Fixed to digital GND
65	BS_DEC_SW	-	Decoder connection detection H: DVD, L: Tuner Fixed to digital GND
66	BS_COR_DET	I	BSCOR detection Fixed to digital GND
67	BS_VOL_DET	I	BSVOL detection Fixed to digital GND
68	BS_CONV_CONT	O	BSConv control Fixed to digital GND
69	VCC	-	Connect to 6 V power Fixed to digital GND
70	BS_BST_CONT	O	Fixed to digital GND
71	VSS	-	Digital GND
72	H_DET	I	H sync detection H: INSEL, L: With output video signal
73	DSEL	O	D terminal output progressive / interlace switching Fixed to digital GND
74	SYNC_POW	O	Sync detection circuit power control
75	YC_SEP_ON	O	S terminal/composite input detection H: Composite, L: S-video
76	S2SW	I	Front L2S Input detection
77	SYNCRO_DET	O	Sync detection output
78	XP_MUTE	O	
79	MAIN/SAP	O	Tuner selection output H: SAP, L: MAIN
80	ERINT	I	
81	N.C.	-	Fixed to digital GND
82	P_FAIL	I	Power failure monitor detection input
83	SAP_DET	O	Tuner Bilingual output L: Bilingual
84	AUTO_PRESET	O	Tuner auto preset output H: Auto preset
85	TA_MUTE	O	Tuner audio mute signal output
86	TU_PCONT	O	Tuner output control
87	TU_V_DET	I	Tuner V sync detection
88	INSEL1	O	Input switching (Fixed to Line1 input)
89	INSEL2	O	Input switching (Fixed to Line1 input)
90	INSEL_TU	O	Input switching (Fixed to Line1 input)
91	FAN_SPEED	O	Fan high speed rotation detection H: Initial rotation, L: Low speed rotation
92	FAN_ONOFF	O	Fan ON/OFF signal output H: ON, L: OFF
93	N.C.	-	Fixed to digital GND
94	N.C.	-	Fixed to digital GND
95	WIDE	O	D terminal aspect output (Set to 4 : 3)
96	OND0	I	Drive temperature detection input
97	KEY1	I	AD key input 1
98	KEY2	I	AD key input 2
99	KEY3	I	AD key input 3
100	KEY4	I	AD key input 4

Pin No.	Pin Name	I/O	Function
101	KEY5	—	Not used
102	BS_C/N_DET	I	BSC / N detection (MAX: 2.9 V normal signal: 2.2 V)
103	AVSS	—	Analog GND
104	TU_GAIN_MAX	I	Tuner AGC input
105	VREF	—	Analog power 5 V
106	AVCC	—	Analog power 6 V
107	INSEL_C	—	Not used
108	VDD1	—	Digital power 6 V
109	SYNCIN	I	Sync signal detection input
110	SVREF	I	Sync signal slice reference potential input
111	VSS1	—	Digital GND
112	VDD3	—	Analog power 5 V
113	CVIN1	I	Component video signal input
114	VSS3	—	Analog GND
115	FSCIN	I	Fsc input
116	TU_AFT	I	Tuner AFT input

MEMO

SECTION 6 SERVICE MODE

This is the diagnostics to define the faulty position.

The diagnostics can be executed using the remote commander (Remote Control Mode 3) and monitor.

To execute the service mode, connect the VIDEO OUT (L2 OUT) connector to the monitor.

Connect the AC power cord to the power outlet.

A message, "WELCOME" appears on the display panel of the main unit.

Keep holding down the "REC PAUSE", "SYSTEM MENU" and "TOOLS" keys, of the main unit (about 10 seconds) until the screen appears on the monitor display.

Either "OK" or "NG" appears on the monitor screen while the diagnostics is in progress.

You can judge the respective device or its peripheral from the message of either "OK" or "NG" on the monitor screen.

When an abnormality is detected, the diagnostics is stopped at that moment and you can select to proceed the diagnostics or to stop it.

Use the keys on the front panel of the main unit to operate the diagnostics.

6-1. Checking Item

Checking item	IC name	REF
GPS 3	IC CXD9778R	IC501
NAZCA	IC CXD4701GB	IC1301
AUDY	IC CXD9722ATQ	IC1501
SILVIA	IC CXD9779R	IC803
VIDEO DEC	IC TVP5146 (Euro) IC TVP 5147 (U/C)	IC702
AV ENC	IC UPD61052GD	IC901
MR	IC CXD9777GG	IC1101
AV DEC	IC CXD1935Q	IC1202
EEPROM	IC CAT24WC32W	IC111
NAND FLASH	IC K9F2808U0C	IC402
SRC	IC AK4122	IC1001
DV	IC UPD728938BGD	IC2102

All parts are mounted on the RD-50 assembly board.

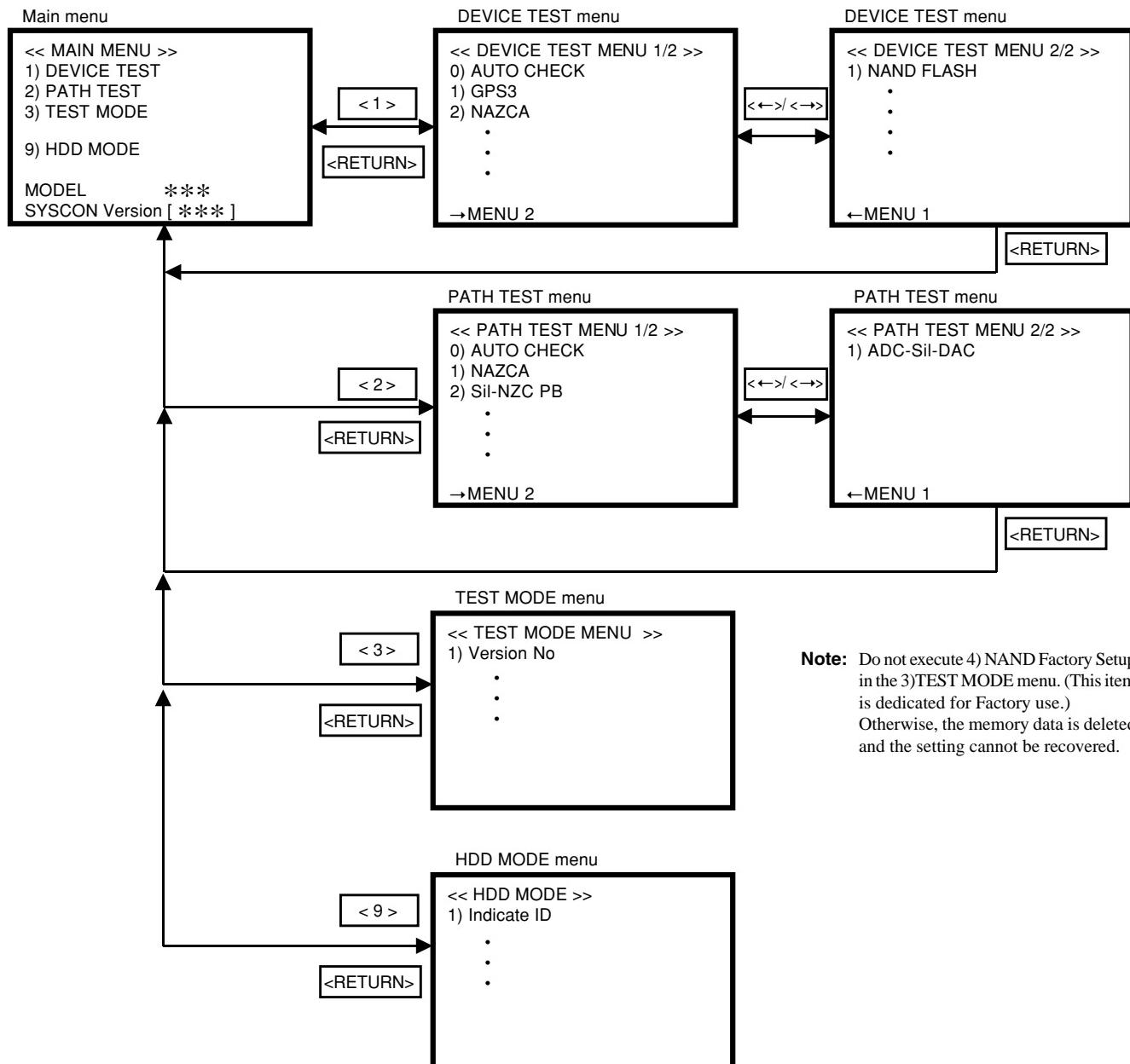
When NG is displayed as the result of the DEVICE TEST, the IC or its peripheral is defective. When NG is displayed on the PATH TEST, defect exists in between ICs.

Note: Do not execute 4) NAND Factory Setup in the 3)TEST MODE menu.

(This item is dedicated for Factory use.)

Otherwise, the memory data is deleted and the setting cannot be recovered.

6-2. Screen Transition in the Service Mode



Note: Do not execute 4) NAND Factory Setup in the 3)TEST MODE menu. (This item is dedicated for Factory use.) Otherwise, the memory data is deleted and the setting cannot be recovered.

6-3. Service Mode Menu Items and Description

- 1) When the key “1” is pressed down, the monitor display moves to the device check menu screen.
- 2) When the key “2” is pressed down, the monitor display moves to the path check menu screen between devices.
- 3) When the key “3” is pressed down, the monitor display moves to the version check screen.
- 4) When the key “9” is pressed down, the monitor display moves to the hard disk check screen.

```
<< MAIN MENU >>
1) DEVICE TEST
2) PATH TEST
3) TEST MODE
9) HDD MODE
MODEL ***  
SYSCON Version [ *** ]
```

6-4. Device Check Menu (1/2)

- 0) When the key “0” is pressed down, all devices are checked automatically.
- 1) When the key “1” is pressed down, the GPS3 device check will be executed.
- 2) When the key “2” is pressed down, the NAZCA device check will be executed.
- 3) When the key “3” is pressed down, the AUDY device check will be executed.
- 4) When the key “4” is pressed down, SILVIA device check will be executed.
- 5) When the key “5” is pressed down, the VIDEO DEC device check will be executed.
- 6) When the key “6” is pressed down, the AV ENC device check will be executed.
- 7) When the key “7” is pressed down, the MR device check will be executed.
- 8) When the key “8” is pressed down, the AV DEC device check will be executed.
- 9) When the key “9” is pressed down, the EEPROM device check will be executed.
- 10) When the key “→” is pressed down, the monitor display moves to the next device check screen.

```
<< DEVICE TEST MENU 1/2 >>
0) AUTO CHECK
1) GPS3
2) NAZCA
3) AUDY
4) SILVIA
5) VIDEO DEC
6) AV ENC
7) MR
8) AV DEC
9) EEPROM

→ MENU 2
```

6-5. Device Check Menu (2/2)

- 1) When the key “1” is pressed down, the NAND FLASH device check will be executed.
- 2) Key “2” is not used in RDR-HX900.
(In some cases, the message “NG” appears. But this equipment is normal and does not have any problem.)
- 3) Key “3” is not used in RDR-HX900.
(In some cases, the message “NG” appears. But this equipment is normal and does not have any problem.)
- 4) When the key “5” is pressed down, the SRC device check will be executed.
- 5) When the key “6” is pressed down, the DV device check will be executed.
- 6) When the key “←” is pressed down, the monitor display returns to the previous device check menu screen.

```
<< DEVICE TEST MENU 2/2 >>
1) NAND FLASH
2) DVD DRIVE ← Not used
3) HDD DRIVE ← Not used

6) SRC
7) DV

← MENU 1
```

6-6. Path Check Menu (1/2)

- 1) When the key “0” is pressed down, the path check is automatically executed.
- 2) When the key “1” is pressed down, the NAZCA path check is executed.
- 3) When the key “2” is pressed down, the path check of PB between Sil to NZC will be executed.
- 4) When the key “3” is pressed down, the path check of EE between Sil to NZC will be executed.
- 5) When the key “4” is pressed down, the path check from Sil to AVENC(V) will be executed.
- 6) When the key “5” is pressed down, the path check of EE between VDEC to Sil will be executed. The video signal of input1 is output. (The screen is black when there is no input.) Confirm it is working normally, and press the ENTER key. The sign, “OK” appears.
- 7) When the key “6” is pressed down, the path check between AVENC to MR will be executed.
- 8) When the key “7” is pressed down, the path check between MR to AVEDEC will be executed.
- 9) When the key “8” is pressed down, the path check of Sil to ReEnc will be executed.
- 10) When the key “→” is pressed down, the monitor display moves to the next path check menu screen.

<< PATH TEST MENU 1/2 >>

- 0) AUTO CHECK
- 1) NAZCA
- 2) Sil – NZC PB
- 3) Sil – NZC EE
- 4) Sil – AVENC (V)
- 5) VDEC – Sil EE
- 6) AVENC – MR
- 7) MR – AVDEC
- 8) Sil ReEnc

→ MENU 2

6-7. Path Check Menu (2/2)

- 1) When the key “1” is pressed down, the path check among ADC to Sil to DAC will be executed.
- 2) When the key “←” is pressed down, the monitor display moves to the previous path check menu screen.

<< PATH TEST MENU 2/2 >>

- 1) ADC – Sil – DAC

← MENU 1

6-8. Hard Disk Check Menu

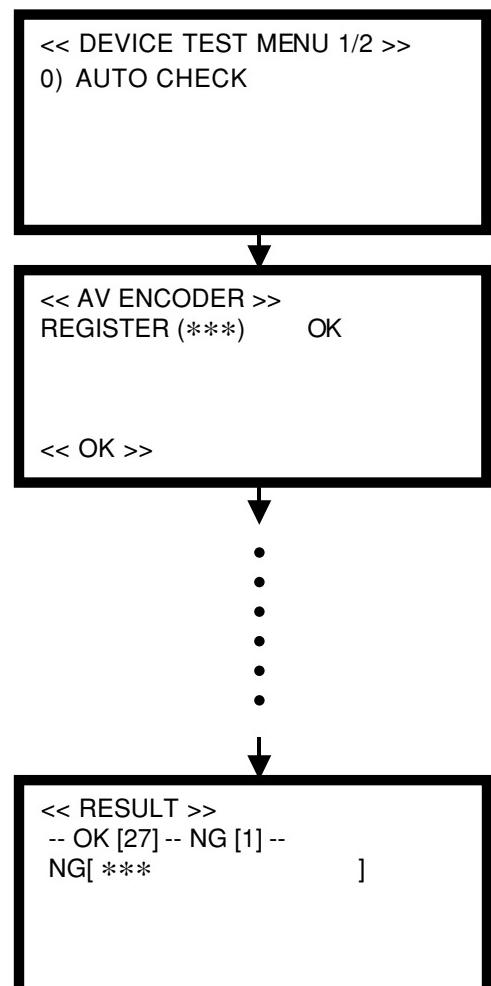
- 1) When the key “1” is pressed down, the ID check will be executed.
- 2) When the key “2” is pressed down, performance check will be executed.
- 3) When the key “3” is pressed down, WRITE ID will be executed.
- 4) When the key “4” is pressed down, Format will be executed.
- 5) When the key “9” is pressed down, Factory check will be executed.
- 6) When the “RETURN” key is pressed, the monitor display moves to the menu screen.

<< HDD MODE >>

- 1) Indicate ID
- 2) Performance Check
- 3) Write ID
- 4) Format
- 9) Factory Check

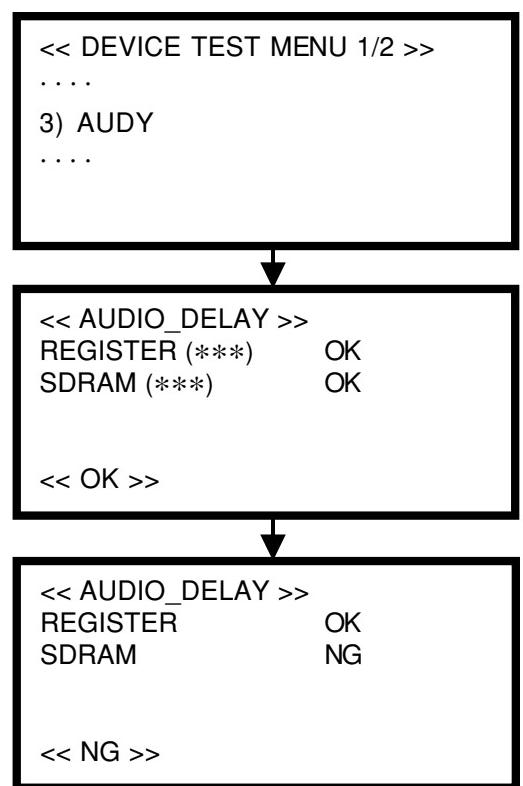
6-9. Device AUTO Check Screen Transition

- 1) Select the item of AUTO CHECK from menu.
- 2) Device check is executed automatically, from no.1 in numeric order.
- 3) When all devices are checked, number of OK/NG items and names of the NG devices are displayed as the RESULT.
- 4) When the “RETURN” key on the remote commander is pressed, the monitor display returns to the menu screen.



6-10. Device Individual Check, Screen Transition

- 1) Select the AUDY item from the menu.
- 2) Perform the register read/write that is the first of the check item and its result is displayed.
- 3) Perform the SDRAM check that is the second item of the check item and its result is displayed.
- 4) When check results of all items are OK, the message OK is displayed. If any one of the check items is found NG, the message NG is displayed.
- 5) When the “RETURN” key is pressed, the monitor display moves to the menu screen.

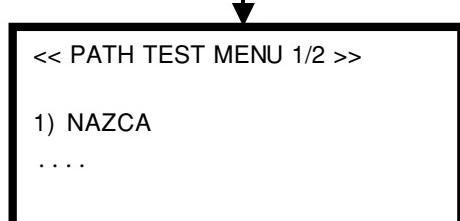
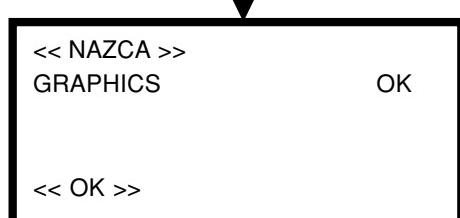
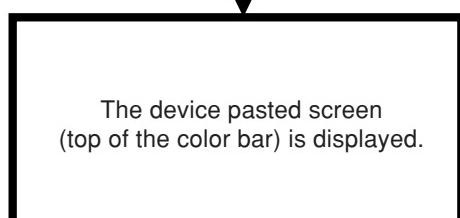
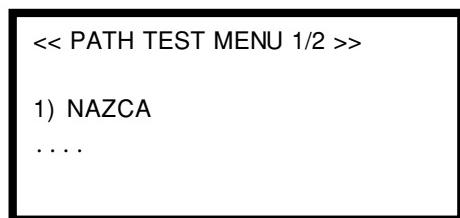


6-11. Path Individual Check

(Pasted Screen Check (visual check) and
data check (digital video data auto-check))

Screen Transition

- 1) Select the NAZCA item from the menu.
- 2) The device pasted screen (top of the color bar) is displayed.
(When visual check is required, the display does not move to the judgment screen but remains displaying the picture.)
- 3) When the "ENTER" key is pressed, the monitor display moves to the judgment screen.
- 4) When the "RETURN" key is pressed on the judgment screen, the monitor display moves to the menu screen.

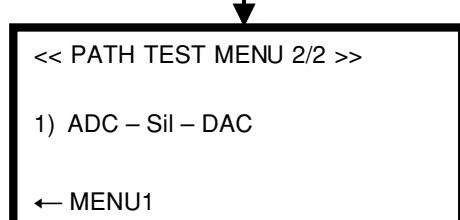
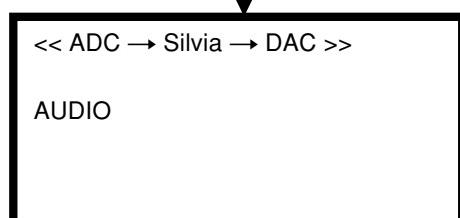
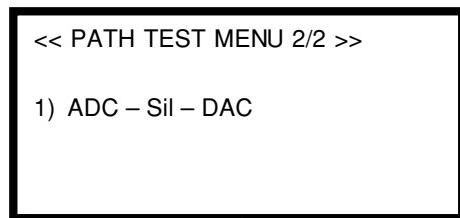


6-12. Path Individual Check

(Audio output Confirmation)

Screen Transition

- 1) Select the check item, ADC to Sil to DAC from the menu.
- 2) The path check is executed and result of judgment is displayed.
It is O.K. when the sound comes out from the input1.
- 3) When the "RETURN" key is pressed on the judgment screen again, the monitor display moves to the menu screen.



1) ADC – Sil – DAC

← MENU1

SECTION 7 ADJUSTMENT

7-1. Video System Adjustment

Preparing for Adjustment

1. Equipments

- Oscilloscope
- Reference Disk
 - HLX-505 (NTSC single layer disk) J-6090-077-A
 - HLX-504 (NTSC dual layer disk) J-6090-078-A

1. Video Level Adjustment (RD-50 Board)

<Purpose>

This adjustment is made to satisfy the NTSC standard. If it is adjusted incorrectly, brightness will be too bright or too dark.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Adjusting element	RV001
Specification	1.0 Vp-p

Adjusting method:

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Adjust RV001 for 1.0 Vp-p.



Fig. 7-1.

2. S-Video Output S-Y Check

<Purpose>

This check confirms that the S-video output. If it adjusted incorrectly, color will be too dark or too thin.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Specification	1.0 ± 0.06 Vp-p

Adjusting method:

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Confirm that the S-Y level is 1.0 ± 0.06 Vp-p.



Fig. 7-2.

3. S-Video Output S-C Level Check

<Purpose>

This check confirms that the S-video output S-C conforms to the NTSC standard. If it is adjusted incorrectly, color will be too dark or too thin.

Mode	Video level adjustment in test mode.
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Specification	$286 \pm 30\text{mVp-p}$

Adjustment method :

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Confirm that the burst signal level of S-C is $286 \pm 30\text{mVp-p}$.



Fig. 7-3.

4. Component Video Output Y Check

<Purpose>

This check confirms that the Y signal output is correct. If this signal level is not correct, brightness of the video signal will be too bright or too dark when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Specification	$1.0 \pm 0.06\text{Vp-p}$

Adjustment method:

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Check that the Y level is $1.0 \pm 0.06\text{Vp-p}$.



Fig. 7-4.

5. Component Video Output B-Y Check

<Purpose>

This check confirms that the B-Y signal of the component video output is correct. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PB) terminal (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Specification	$700 \pm 50\text{mVp-p}$

Adjustment method:

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Confirm that the B-Y level is $700 \pm 50\text{mVp-p}$.

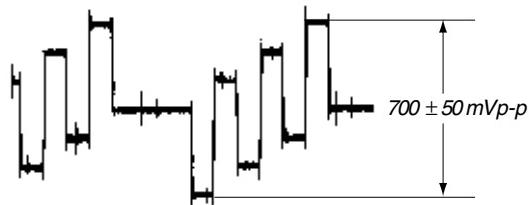


Fig. 7-5.

6. Component Video Output R-Y Check

<Purpose>

This check confirms that the R-Y signal of the component video output is correct. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PR) connector (terminated in $75\ \Omega$)
Instrument	Oscilloscope
Specification	$700 \pm 50\text{mVp-p}$

Adjustment method:

- 1) Insert the reference disk and play back the 100% color bars.
- 2) Confirm that the R-Y level is $700 \pm 50\text{mVp-p}$.

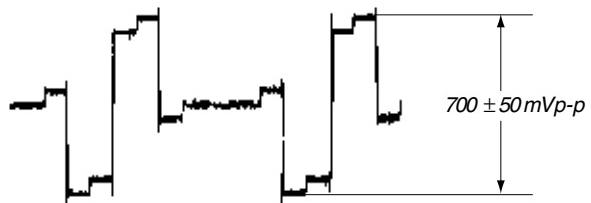


Fig. 7-6.

SECTION 8 REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:

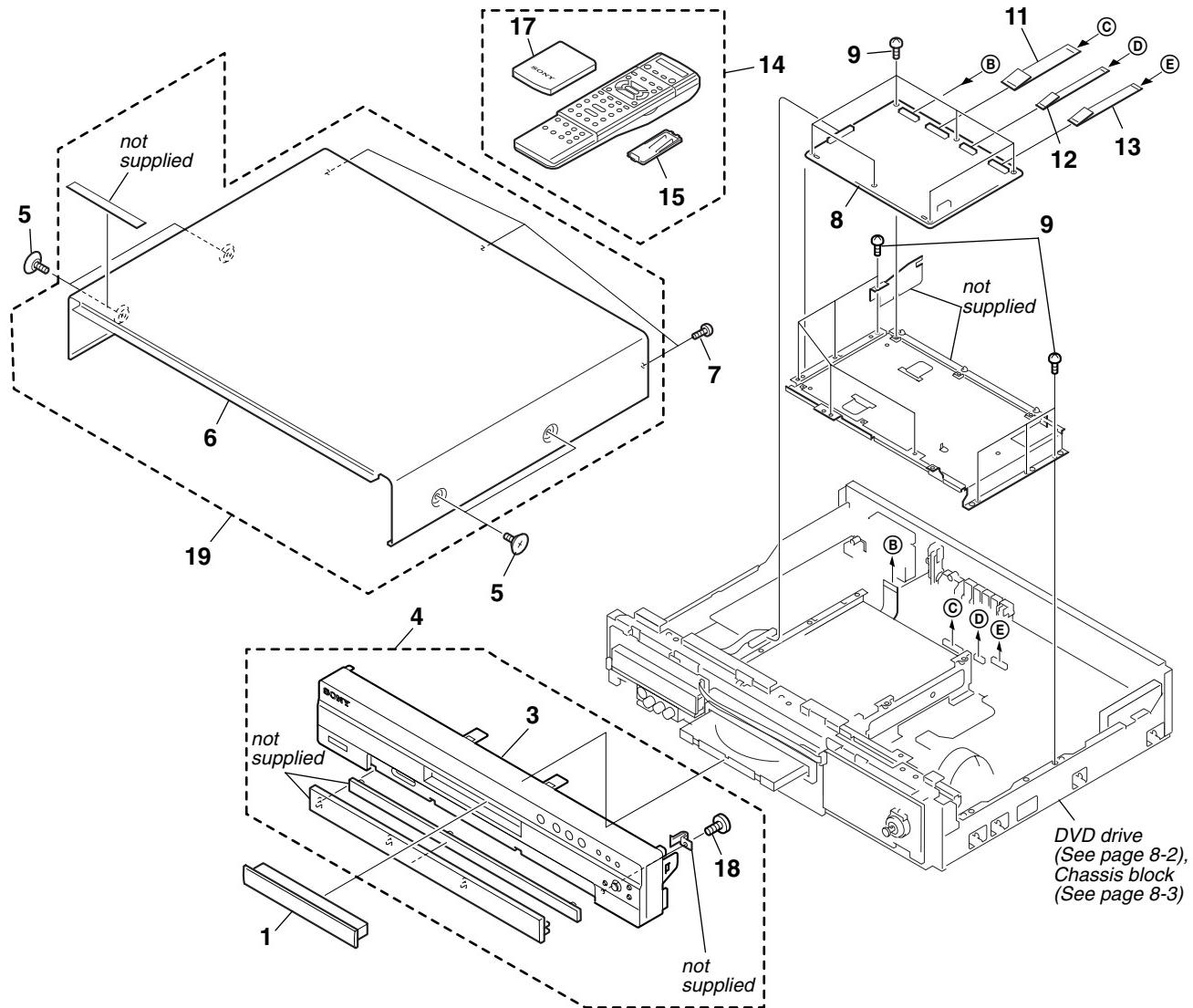
- XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ▲ or dotted line with mark △ are critical for safety. Replace only with part number specified.

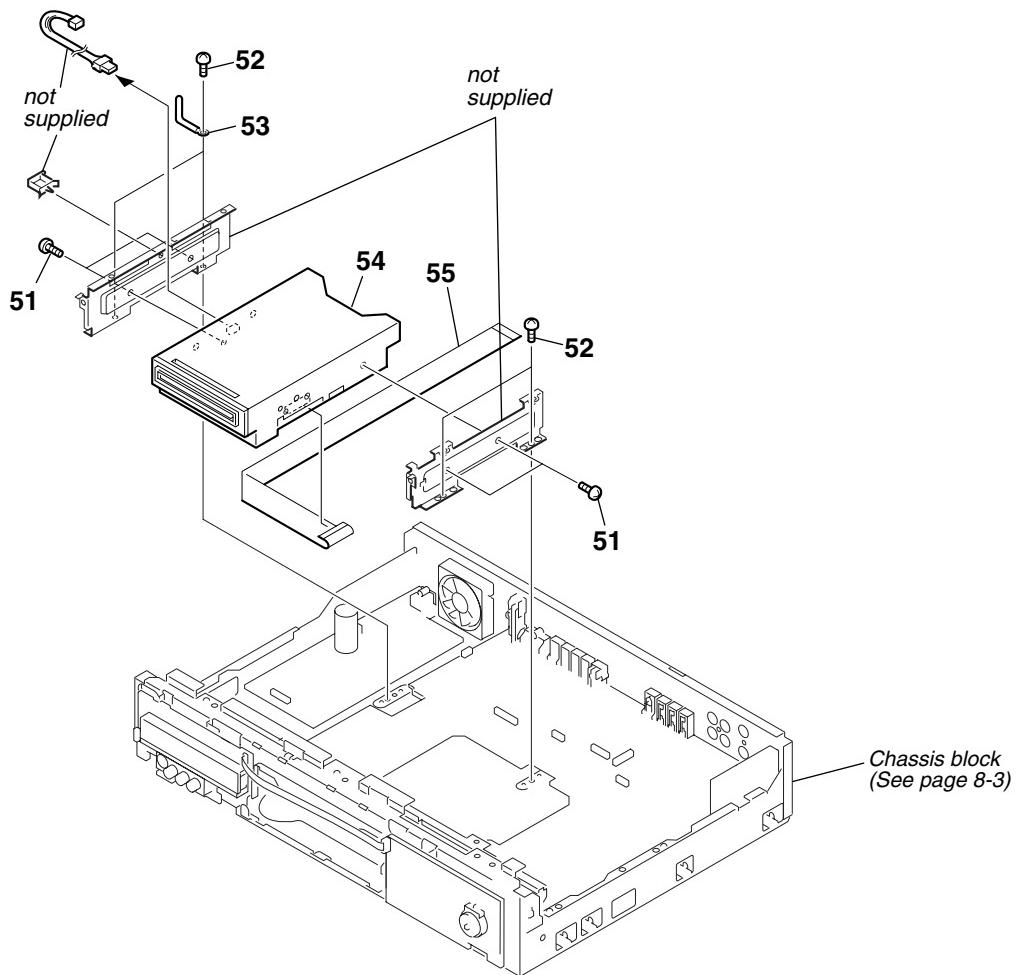
Les composants identifiés par une marque ▲ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. OVERALL SECTION



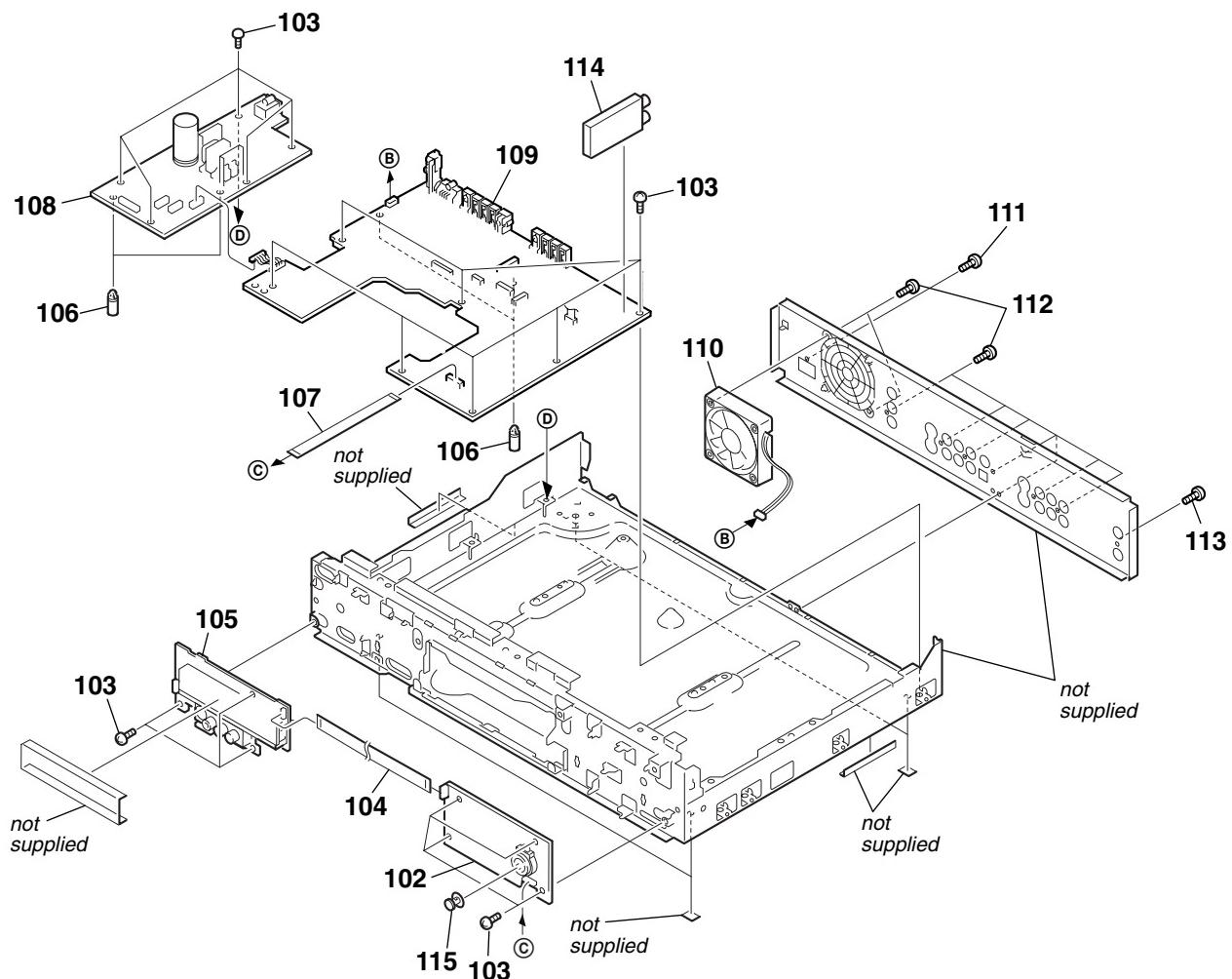
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	X-2021-258-1	COVER ASSY, TRAY		11	1-827-794-11	CABLE, FLEXIBLE FLAT (FRA-6)	
3	3-066-225-11	SONY BADGE (5-A)		12	1-829-256-11	CABLE, FLEXIBLE FLAT (FRA-5)	
4	A-1055-246-A	PANEL BLOCK ASSY, FRONT		13	1-829-221-11	CABLE, FLEXIBLE FLAT (FRA-7)	
5	3-070-883-41	SCREW, TAPPING		14	1-478-722-11	REMOTE COMMANDER (RMT-D205A)	
6	2-023-274-31	CASE UPPER		15	3-071-119-91	LID, BATTERY (FOR RMT-D205A)	
7	3-077-331-31	+BV3 (3-CR)		17	3-087-256-21	DOOR(RW2).SLIDE (FOR RMT-D205A)	
8	A-1070-809-A	RD-50 (UBS) COMPL		18	4-921-277-11	SCREW (B2.6X8), TAPPING, BIND	
9	3-077-331-01	+BV3 (3-CR)		19	A-1061-576-A	CASE ASSY, UPPER (SERVICE)	

8-1-2. DVD DRIVE



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
51	3-088-023-01	+B3 (3-CR)		54	8-457-599-50	DRIVE, DVD DW-U15A-S2	
52	3-077-331-01	+BV3 (3-CR)		55	1-827-795-11	CABLE, FLEXIBLE FLAT (FRD-3)	
53	4-662-796-01	CLIP, COACHING					

8-1-3. CHASSIS BLOCK



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
O 102	A-1056-648-A	FR-216 (UB) COMPL		O 109	A-1056-644-A	AV-84 (UB) COMPL	
103	3-077-331-01	+BV3 (3-CR)		110	1-787-118-11	FAN, D.C.	
104	1-827-798-11	CABLE, FLEXIBLE FLAT (FLR-4)		111	3-088-022-01	+P3 (B TYPE) (3-CR)	
O 105	A-1056-646-A	FL-141 COMPL		112	3-077-331-31	+BV3 (3-CR)	
106	4-958-674-31	SPACER, MINIATURE CARD		113	3-088-023-01	+B3 (3-CR)	
107	1-827-797-11	CABLE, FLEXIBLE FLAT (FAR-4)		114	8-598-612-10	TUNER, FSS BTF-DA401	
▲ 108	1-468-842-11	POWER BLOCK		115	2-023-315-21	KNOB, CURSOR	

Note :
The components identified by mark ▲ or dotted line with mark ▲ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ▲ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “**” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μ F

- COILS
uH: μ H
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

When indicating parts by reference number, please include the board name.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
O A-1056-644-A	AV-84 (UB) COMPL		*****	C318	1-126-934-11	ELECT	220uF 20.00% 16V
		< CAPACITOR >		C319	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C103	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C320	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C104	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C321	1-126-960-11	ELECT	1uF 20.00% 50V
C105	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C324	1-126-947-11	ELECT	47uF 20.00% 16V
C108	1-127-573-11	CERAMIC CHIP	1uF 10% 16V	C326	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C112	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C327	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C113	1-126-947-11	ELECT	47uF 20.00% 16V	C328	1-126-947-11	ELECT	47uF 20.00% 16V
C116	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C329	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C117	1-127-573-11	CERAMIC CHIP	1uF 10% 16V	C330	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C202	1-126-947-11	ELECT	47uF 20.00% 16V	C333	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C203	1-126-947-11	ELECT	47uF 20.00% 16V	C403	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C204	1-126-947-11	ELECT	47uF 20.00% 16V	C404	1-127-573-11	CERAMIC CHIP	1uF 10% 16V
C205	1-107-714-11	ELECT	10uF 20.00% 16V	C405	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C206	1-126-963-11	ELECT	4.7uF 20.00% 50V	C408	1-126-947-11	ELECT	47uF 20.00% 16V
C208	1-126-963-11	ELECT	4.7uF 20.00% 50V	C413	1-126-947-11	ELECT	47uF 20.00% 16V
C209	1-126-947-11	ELECT	47uF 20.00% 16V	C414	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C210	1-126-947-11	ELECT	47uF 20.00% 16V	C415	1-125-838-11	CERAMIC CHIP	2.2uF 10% 6.3V
C211	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C416	1-164-227-11	CERAMIC CHIP	0.022uF 10.00% 25V
C212	1-126-947-11	ELECT	47uF 20.00% 16V	C417	1-162-964-11	CERAMIC CHIP	0.001uF 10.00% 50V
C213	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C418	1-162-968-11	CERAMIC CHIP	0.0047uF 10.00% 50V
C214	1-126-947-11	ELECT	47uF 20.00% 16V	C419	1-162-966-11	CERAMIC CHIP	0.0022uF 10.00% 50V
C215	1-126-961-11	ELECT	2.2uF 20.00% 50V	C424	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C216	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C426	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C217	1-107-714-11	ELECT	10uF 20.00% 16V	C427	1-126-947-11	ELECT	47uF 20.00% 16V
C218	1-126-947-11	ELECT	47uF 20.00% 16V	C428	1-126-947-11	ELECT	47uF 20.00% 16V
C219	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C429	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V
C301	1-126-947-11	ELECT	47uF 20.00% 16V	C430	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C302	1-126-947-11	ELECT	47uF 20.00% 16V	C432	1-126-916-11	ELECT	1000uF 20.00% 6.3V
C304	1-126-947-11	ELECT	47uF 20.00% 16V	C434	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C306	1-126-947-11	ELECT	47uF 20.00% 16V	C435	1-126-947-11	ELECT	47uF 20.00% 16V
C307	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C437	1-126-964-11	ELECT	10uF 20.00% 50V
C308	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	C439	1-115-339-11	CERAMIC CHIP	0.1uF 10.00% 50V
C309	1-126-947-11	ELECT	47uF 20.00% 16V	C443	1-126-964-11	ELECT	10uF 20.00% 50V
C310	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V	C602	1-126-947-11	ELECT	47uF 20.00% 16V
C311	1-164-217-11	CERAMIC CHIP	150PF 5.00% 50V	C603	1-126-947-11	ELECT	47uF 20.00% 16V
C312	1-164-739-11	CERAMIC CHIP	560PF 5.00% 50V	C604	1-115-416-11	CERAMIC CHIP	0.001uF 5.00% 25V
C313	1-164-739-11	CERAMIC CHIP	560PF 5.00% 50V	C606	1-126-947-11	ELECT	47uF 20.00% 16V
C314	1-164-218-11	CERAMIC CHIP	180PF 5.00% 50V	C607	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
C315	1-164-218-11	CERAMIC CHIP	180PF 5.00% 50V	C609	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V
C316	1-126-947-11	ELECT	47uF 20.00% 16V	C610	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V
C317	1-126-947-11	ELECT	47uF 20.00% 16V	C612	1-162-919-11	CERAMIC CHIP	22PF 5.00% 50V
				C613	1-162-918-11	CERAMIC CHIP	18PF 5.00% 50V
				C614	1-162-915-11	CERAMIC CHIP	10PF 0.50PF 50V
				C615	1-162-915-11	CERAMIC CHIP	10PF 0.50PF 50V

C617	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V	C805	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C806	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C620	1-162-920-11	CERAMIC CHIP	27PF	5.00%	50V	C809	1-126-947-11	ELECT	47uF	20.00%	16V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C810	1-126-947-11	ELECT	47uF	20.00%	16V
C622	1-126-933-11	ELECT	100uF	20.00%	16V	C811	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C812	1-126-947-11	ELECT	47uF	20.00%	16V
C626	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V	C813	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C630	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	C814	1-126-947-11	ELECT	47uF	20.00%	16V
C631	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V	C815	1-107-725-11	CERAMIC CHIP	0.1uF	10.00%	16V
C632	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C816	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C634	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C1101	1-163-021-91	CERAMIC CHIP	0.01uF	10.00%	50V
C635	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V	C1102	1-126-947-11	ELECT	47uF	20.00%	16V
C636	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C1103	1-126-947-11	ELECT	47uF	20.00%	16V
C637	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	C1104	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V
C638	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	< CONNECTOR >					
C640	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	CN101	1-778-317-11	CONNECTOR, BOARD TO BOARD	13P		
C645	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	CN102	1-564-705-11	PIN, CONNECTOR (SMALL TYPE)	3P		
C646	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	CN501	1-784-326-11	CONNECTOR, FFC/FPC	27P		
C647	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	CN502	1-778-274-11	CONNECTOR, FFC/FPC	13P		
C648	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	CN503	1-774-769-11	CONNECTOR, FFC/FPC	25P		
C652	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	O CN601	1-695-110-11	PIN, CONNECTOR (PC BOARD)	8P		
C653	1-115-456-21	CAPACITOR	0.22F		5.5V	O CN603	1-774-768-11	CONNECTOR, FFC/FPC	17P		
C659	1-162-920-11	CERAMIC CHIP	27PF	5.00%	50V	CN801	1-573-489-11	PIN, CONNECTOR (PC BOARD)	11P		
C663	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	< DIODE >					
C664	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V	D301	8-719-050-38	DIODE M1MA152WK-T1			
C666	1-126-947-11	ELECT	47uF	20.00%	16V	D405	8-719-081-97	DIODE MMDL914T1			
C668	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	D408	1-216-053-11	RES-CHIP	1.5K	5%	1/10W
C701	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D409	1-216-053-11	RES-CHIP	1.5K	5%	1/10W
C702	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D602	8-719-075-77	DIODE EC10DA40-TE12			
C703	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D613	8-719-081-97	DIODE MMDL914T1			
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D701	8-719-050-38	DIODE M1MA152WK-T1			
C706	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D802	8-719-071-15	DIODE HZM6.8ZWA1TL			
C707	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D803	8-719-071-15	DIODE HZM6.8ZWA1TL			
C708	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D805	8-719-071-15	DIODE HZM6.8ZWA1TL			
C709	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D806	8-719-071-15	DIODE HZM6.8ZWA1TL			
C710	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D811	8-719-071-15	DIODE HZM6.8ZWA1TL			
C711	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D812	8-719-071-15	DIODE HZM6.8ZWA1TL			
C712	1-126-947-11	ELECT	47uF	20.00%	16V	D815	8-719-071-15	DIODE HZM6.8ZWA1TL			
C713	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	D816	8-719-071-15	DIODE HZM6.8ZWA1TL			
C714	1-165-908-11	CERAMIC CHIP	1uF	10%	10V	D1101	8-719-075-77	DIODE EC10DA40-TE12			
C715	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	D1106	8-719-071-15	DIODE HZM6.8ZWA1TL			
C716	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	< FERRITE BEAD >					
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	FB601	1-414-813-11	FERRITE	0uH		
C718	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	< IC >					
C719	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V	IC101	6-705-308-01	IC SI-3010KM-TL			
C720	1-126-947-11	ELECT	47uF	20.00%	16V	IC102	6-706-237-01	IC PQ1MX55M2SPQ			
C721	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	IC103	6-705-338-01	IC TK11250CMCL-G			
C722	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V	IC201	6-703-503-01	IC AK5365VQ			
C723	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	IC301	8-759-052-52	IC L78M05T-FA			
C724	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	IC302	6-705-404-01	IC BA4558F-HTE2			
C725	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	IC401	6-706-237-01	IC PQ1MX55M2SPQ			
C726	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	IC404	8-749-925-00	IC TK11819MTL			
C727	1-126-947-11	ELECT	47uF	20.00%	16V	IC602	8-759-679-19	IC S-24C04BFJ-TB			
C741	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V	IC603	6-804-347-01	IC M306H2MC-511FPU0			
C742	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V	IC603	6-804-411-01	IC M306H2FCFP-511U0			
C751	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	IC604	6-702-879-01	IC R3112N281A-TR			

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
IC607	8-759-242-70	IC TC7WU04F(TE12R)		Q607	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR	
IC701	6-705-005-01	IC LA73031V-TLM-E		Q701	8-729-024-88	TRANSISTOR MUN2212T1	
IC801	8-759-667-17	IC L79M05TLL-SONY-TL-E		Q702	8-729-045-17	TRANSISTOR 2SB1561T100Q	
IC802	6-704-839-01	IC LA73056-TLM-E		Q703	8-729-010-05	TRANSISTOR MSB709-RT1	
IC1101	6-804-428-01	IC S3C80F9XKA-S077		Q704	8-729-010-05	TRANSISTOR MSB709-RT1	
		< JACK >		Q801	8-729-424-08	TRANSISTOR MUN2111T1	
J802	1-817-402-11	PHONO JACK 3P		Q802	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR	
J803	1-784-643-21	JACK BLOCK, PIN		Q809	8-729-010-25	TRANSISTOR MSD601-RT1	
J804	1-784-643-21	JACK BLOCK, PIN		Q810	8-729-010-25	TRANSISTOR MSD601-RT1	
		< JUMPER RESISTOR >		Q811	8-729-010-25	TRANSISTOR MSD601-RT1	
JS401	1-216-295-91SHORT CHIP	0		Q812	8-729-010-25	TRANSISTOR MSD601-RT1	
JS402	1-216-295-91SHORT CHIP	0		Q813	8-729-010-25	TRANSISTOR MSD601-RT1	
JS409	1-216-295-91SHORT CHIP	0		Q814	8-729-010-25	TRANSISTOR MSD601-RT1	
JS410	1-216-295-91SHORT CHIP	0		Q815	8-729-421-19	TRANSISTOR MUN2213T1	
JS411	1-216-295-91SHORT CHIP	0		Q816	8-729-424-08	TRANSISTOR MUN2111T1	
		< COIL >		Q1104	8-729-045-17	TRANSISTOR 2SB1561T100Q	
						< RESISTOR >	
L201	1-414-187-11	INDUCTOR	47uH	R105	1-216-296-11	SHORT CHIP	0
L402	1-414-187-11	INDUCTOR	47uH	R106	1-216-296-11	SHORT CHIP	0
L403	1-469-967-21	INDUCTOR	10uH	R107	1-216-296-11	SHORT CHIP	0
L405	1-469-967-21	INDUCTOR	10uH	R108	1-216-296-11	SHORT CHIP	0
L406	1-414-858-31	INDUCTOR	1MH	R109	1-218-895-11	METAL CHIP	100K 0.50% 1/10W
L408	1-414-187-11	INDUCTOR	47uH	R110	1-216-833-11	METAL CHIP	10K 5% 1/10W
L409	1-414-187-11	INDUCTOR	47uH	R111	1-218-865-11	METAL CHIP	5.6K 0.50% 1/10W
L411	1-414-187-11	INDUCTOR	47uH	R118	1-216-833-11	METAL CHIP	10K 5% 1/10W
L601	1-412-533-21	INDUCTOR	47uH	R137	1-218-907-11	METAL CHIP	330K 0.50% 1/10W
L602	1-412-533-21	INDUCTOR	47uH	R138	1-218-897-11	METAL CHIP	120K 0.50% 1/10W
L701	1-469-967-21	INDUCTOR	10uH	R139	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
L801	1-400-145-21	INDUCTOR	47uH	R207	1-216-864-11	SHORT CHIP	0
L802	1-400-145-21	INDUCTOR	47uH	R212	1-216-864-11	SHORT CHIP	0
L803	1-412-060-11	INDUCTOR	22uH	R214	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
		< TRANSISTOR >		R215	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q101	8-729-421-19	TRANSISTOR MUN2213T1		R216	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q301	8-729-424-08	TRANSISTOR MUN2111T1		R217	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q302	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR		R218	1-218-874-11	METAL CHIP	13K 0.50% 1/10W
Q303	8-729-010-25	TRANSISTOR MSD601-RT1		R220	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q304	8-729-045-17	TRANSISTOR 2SB1561T100Q		R221	1-218-874-11	METAL CHIP	13K 0.50% 1/10W
Q305	8-729-421-19	TRANSISTOR MUN2213T1		R222	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q307	8-729-027-53	TRANSISTOR DTC124TKA-T146		R223	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q309	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO		R224	1-218-887-11	METAL CHIP	47K 0.50% 1/10W
Q310	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO		R228	1-216-837-11	METAL CHIP	22K 5% 1/10W
Q311	8-729-010-05	TRANSISTOR MSB709-RT1		R229	1-216-837-11	METAL CHIP	22K 5% 1/10W
Q313	8-729-010-25	TRANSISTOR MSD601-RT1		R230	1-216-837-11	METAL CHIP	22K 5% 1/10W
Q402	8-729-010-25	TRANSISTOR MSD601-RT1		R234	1-216-809-11	METAL CHIP	100 5% 1/10W
Q403	8-729-421-19	TRANSISTOR MUN2213T1		R235	1-216-818-11	METAL CHIP	560 5% 1/10W
Q406	8-729-010-25	TRANSISTOR MSD601-RT1		R236	1-216-801-11	METAL CHIP	22 5% 1/10W
Q407	8-729-010-25	TRANSISTOR MSD601-RT1		R237	1-216-797-11	METAL CHIP	10 5% 1/10W
Q408	8-729-010-05	TRANSISTOR MSB709-RT1		R238	1-216-801-11	METAL CHIP	22 5% 1/10W
Q410	8-729-421-22	TRANSISTOR MUN2111T1		R242	1-216-836-11	METAL CHIP	18K 5% 1/10W
Q412	8-729-010-05	TRANSISTOR MSB709-RT1		R243	1-216-836-11	METAL CHIP	18K 5% 1/10W
Q413	8-729-010-25	TRANSISTOR MSD601-RT1		R244	1-216-836-11	METAL CHIP	18K 5% 1/10W
Q414	8-729-421-22	TRANSISTOR MUN2111T1		R302	1-216-821-11	METAL CHIP	1K 5% 1/10W
Q415	8-729-045-17	TRANSISTOR 2SB1561T100Q		R303	1-216-817-11	METAL CHIP	470 5% 1/10W
Q601	8-729-010-05	TRANSISTOR MSB709-RT1		R304	1-216-849-11	METAL CHIP	220K 5% 1/10W
Q602	8-729-010-25	TRANSISTOR MSD601-RT1		R305	1-216-833-11	METAL CHIP	10K 5% 1/10W
Q603	8-729-421-22	TRANSISTOR MUN2111T1		R306	1-216-833-11	METAL CHIP	10K 5% 1/10W
Q604	8-729-424-08	TRANSISTOR MUN2111T1		R307	1-216-833-11	METAL CHIP	10K 5% 1/10W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R308	1-216-845-11	METAL CHIP	100K	5%	1/10W	R479	1-216-837-11	METAL CHIP	22K	5%	1/10W
R309	1-216-830-11	METAL CHIP	5.6K	5%	1/10W	R480	1-216-864-11	SHORT CHIP	0		
R310	1-216-863-11	METAL CHIP	4.7K	0.50%	1/10W	R481	1-216-837-11	METAL CHIP	22K	5%	1/10W
R311	1-216-863-11	METAL CHIP	4.7K	0.50%	1/10W	R482	1-216-864-11	SHORT CHIP	0		
R312	1-216-863-11	METAL CHIP	4.7K	0.50%	1/10W	R484	1-216-809-11	METAL CHIP	100	5%	1/10W
R313	1-216-863-11	METAL CHIP	4.7K	0.50%	1/10W	R486	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R314	1-216-865-11	METAL CHIP	5.6K	0.50%	1/10W	R487	1-216-809-11	METAL CHIP	100	5%	1/10W
R315	1-216-865-11	METAL CHIP	5.6K	0.50%	1/10W	R488	1-216-809-11	METAL CHIP	100	5%	1/10W
R316	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R489	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R317	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R490	1-216-809-11	METAL CHIP	100	5%	1/10W
R318	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R491	1-216-821-11	METAL CHIP	1K	5%	1/10W
R320	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R492	1-216-821-11	METAL CHIP	1K	5%	1/10W
R321	1-216-865-11	METAL CHIP	5.6K	0.50%	1/10W	R493	1-216-821-11	METAL CHIP	1K	5%	1/10W
R323	1-216-865-11	METAL CHIP	5.6K	0.50%	1/10W	R505	1-216-833-11	METAL CHIP	10K	5%	1/10W
R324	1-216-864-11	SHORT CHIP	0			R508	1-216-833-11	METAL CHIP	10K	5%	1/10W
R326	1-216-817-11	METAL CHIP	470	5%	1/10W	R601	1-216-833-11	METAL CHIP	10K	5%	1/10W
R327	1-216-817-11	METAL CHIP	470	5%	1/10W	R602	1-216-833-11	METAL CHIP	10K	5%	1/10W
R330	1-216-841-11	METAL CHIP	47K	5%	1/10W	R604	1-216-809-11	METAL CHIP	100	5%	1/10W
R331	1-216-841-11	METAL CHIP	47K	5%	1/10W	R605	1-216-809-11	METAL CHIP	100	5%	1/10W
R332	1-216-833-11	METAL CHIP	10K	5%	1/10W	R607	1-216-809-11	METAL CHIP	100	5%	1/10W
R334	1-216-833-11	METAL CHIP	10K	5%	1/10W	R610	1-216-789-11	SHORT CHIP	2.2	5%	1/10W
R335	1-216-841-11	METAL CHIP	47K	5%	1/10W	R611	1-216-840-11	METAL CHIP	39K	5%	1/10W
R338	1-216-833-11	METAL CHIP	10K	5%	1/10W	R612	1-216-837-11	METAL CHIP	22K	5%	1/10W
R340	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R613	1-216-817-11	METAL CHIP	470	5%	1/10W
R343	1-216-845-11	METAL CHIP	100K	5%	1/10W	R615	1-216-833-11	METAL CHIP	10K	5%	1/10W
R345	1-216-821-11	METAL CHIP	1K	5%	1/10W	R616	1-216-864-11	SHORT CHIP	0		
R346	1-216-821-11	METAL CHIP	1K	5%	1/10W	R618	1-216-864-11	SHORT CHIP	0		
R347	1-216-821-11	METAL CHIP	1K	5%	1/10W	R619	1-216-833-11	METAL CHIP	10K	5%	1/10W
R348	1-216-813-11	METAL CHIP	220	5%	1/10W	R620	1-216-833-11	METAL CHIP	10K	5%	1/10W
R350	1-216-807-11	METAL CHIP	68	5%	1/10W	R621	1-216-864-11	SHORT CHIP	0		
R352	1-216-817-11	METAL CHIP	470	5%	1/10W	R622	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R353	1-216-817-11	METAL CHIP	470	5%	1/10W	R623	1-216-864-11	SHORT CHIP	0		
R354	1-216-817-11	METAL CHIP	470	5%	1/10W	R624	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R355	1-216-817-11	METAL CHIP	470	5%	1/10W	R625	1-216-864-11	SHORT CHIP	0		
R362	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R626	1-216-833-11	METAL CHIP	10K	5%	1/10W
R405	1-216-809-11	METAL CHIP	100	5%	1/10W	R628	1-216-833-11	METAL CHIP	10K	5%	1/10W
R407	1-216-049-11	RES-CHIP	1K	5%	1/10W	R631	1-216-833-11	METAL CHIP	10K	5%	1/10W
R409	1-216-845-11	METAL CHIP	100K	5%	1/10W	R634	1-216-059-11	RES-CHIP	2.7K	5%	1/10W
R410	1-216-838-11	METAL CHIP	27K	5%	1/10W	R635	1-216-059-11	RES-CHIP	2.7K	5%	1/10W
R411	1-216-895-11	METAL CHIP	100K	0.50%	1/10W	R637	1-216-833-11	METAL CHIP	10K	5%	1/10W
R412	1-216-903-11	METAL CHIP	220K	0.50%	1/10W	R639	1-216-809-11	METAL CHIP	100	5%	1/10W
R413	1-216-895-11	METAL CHIP	100K	0.50%	1/10W	R640	1-216-809-11	METAL CHIP	100	5%	1/10W
R414	1-216-864-11	SHORT CHIP	0			R642	1-216-833-11	METAL CHIP	10K	5%	1/10W
R418	1-216-823-11	METAL CHIP	1.5K	5%	1/10W	R653	1-216-809-11	METAL CHIP	100	5%	1/10W
R419	1-216-828-11	METAL CHIP	3.9K	5%	1/10W	R654	1-216-864-11	SHORT CHIP	0		
R420	1-216-821-11	METAL CHIP	1K	5%	1/10W	R657	1-216-833-11	METAL CHIP	10K	5%	1/10W
R421	1-216-826-11	METAL CHIP	2.7K	5%	1/10W	R658	1-216-833-11	METAL CHIP	10K	5%	1/10W
R423	1-216-857-11	METAL CHIP	1M	5%	1/10W	R659	1-216-833-11	METAL CHIP	10K	5%	1/10W
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R661	1-216-833-11	METAL CHIP	10K	5%	1/10W
R426	1-216-809-11	METAL CHIP	100	5%	1/10W	R662	1-216-817-11	METAL CHIP	470	5%	1/10W
R427	1-216-823-11	METAL CHIP	1.5K	5%	1/10W	R667	1-216-833-11	METAL CHIP	10K	5%	1/10W
R428	1-216-821-11	METAL CHIP	1K	5%	1/10W	R668	1-216-864-11	SHORT CHIP	0		
R433	1-216-821-11	METAL CHIP	1K	5%	1/10W	R669	1-216-864-11	SHORT CHIP	0		
R434	1-216-809-11	METAL CHIP	100	5%	1/10W	R671	1-216-857-11	METAL CHIP	1M	5%	1/10W
R436	1-216-833-11	METAL CHIP	10K	5%	1/10W	R673	1-216-289-11	METAL CHIP	510	5%	1/10W
R440	1-216-821-11	METAL CHIP	1K	5%	1/10W	R674	1-216-841-11	METAL CHIP	47K	5%	1/10W
R441	1-216-821-11	METAL CHIP	1K	5%	1/10W	R675	1-216-864-11	SHORT CHIP	0		
R453	1-216-845-11	METAL CHIP	100K	5%	1/10W	R676	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R457	1-216-025-11	RES-CHIP	100	5%	1/10W	R677	1-216-853-11	METAL CHIP	470K	5%	1/10W
R476	1-216-296-11	SHORT CHIP	0			R678	1-216-833-11	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R679	1-216-817-11	METAL CHIP	470	5%	1/10W	R859	1-216-022-11	RES-CHIP	75	5%	1/10W
R680	1-216-809-11	METAL CHIP	100	5%	1/10W	R860	1-216-022-11	RES-CHIP	75	5%	1/10W
R685	1-216-817-11	METAL CHIP	470	5%	1/10W	R861	1-216-022-11	RES-CHIP	75	5%	1/10W
R686	1-216-809-11	METAL CHIP	100	5%	1/10W	R862	1-218-285-11	METAL CHIP	75	5%	1/10W
R687	1-216-864-11	SHORT CHIP	0			R873	1-218-285-11	METAL CHIP	75	5%	1/10W
R688	1-216-809-11	METAL CHIP	100	5%	1/10W	R874	1-218-285-11	METAL CHIP	75	5%	1/10W
R689	1-216-809-11	METAL CHIP	100	5%	1/10W	R875	1-218-285-11	METAL CHIP	75	5%	1/10W
R691	1-216-833-11	METAL CHIP	10K	5%	1/10W	R883	1-216-864-11	SHORT CHIP	0		
R692	1-216-809-11	METAL CHIP	100	5%	1/10W	R884	1-216-864-11	SHORT CHIP	0		
R695	1-216-833-11	METAL CHIP	10K	5%	1/10W	R885	1-216-864-11	SHORT CHIP	0		
R696	1-216-809-11	METAL CHIP	100	5%	1/10W	R886	1-216-864-11	SHORT CHIP	0		
R698	1-216-809-11	METAL CHIP	100	5%	1/10W	R887	1-216-864-11	SHORT CHIP	0		
R699	1-216-809-11	METAL CHIP	100	5%	1/10W	R1102	1-216-821-11	METAL CHIP	1K	5%	1/10W
R703	1-216-829-11	METAL CHIP	4.7K	5%	1/10W	R1103	1-216-821-11	METAL CHIP	1K	5%	1/10W
R705	1-216-864-11	SHORT CHIP	0			R1106	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R707	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1107	1-216-037-11	RES-CHIP	330	5%	1/10W
R708	1-216-864-11	SHORT CHIP	0			R1108	1-216-864-11	SHORT CHIP	0		
R709	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1110	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R710	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1116	1-216-845-11	METAL CHIP	100K	5%	1/10W
R711	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1117	1-216-833-11	METAL CHIP	10K	5%	1/10W
R712	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1124	1-216-864-11	SHORT CHIP	0		
R713	1-216-864-11	SHORT CHIP	0			R1125	1-216-833-11	METAL CHIP	10K	5%	1/10W
R716	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1126	1-216-833-11	METAL CHIP	10K	5%	1/10W
R717	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1127	1-216-833-11	METAL CHIP	10K	5%	1/10W
R720	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1128	1-216-833-11	METAL CHIP	10K	5%	1/10W
R721	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1129	1-216-833-11	METAL CHIP	10K	5%	1/10W
R743	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1130	1-216-833-11	METAL CHIP	10K	5%	1/10W
R754	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1131	1-216-833-11	METAL CHIP	10K	5%	1/10W
R755	1-216-821-11	METAL CHIP	1K	5%	1/10W	R1132	1-216-037-11	RES-CHIP	330	5%	1/10W
R802	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1601	1-216-809-11	METAL CHIP	100	5%	1/10W
R805	1-216-864-11	SHORT CHIP	0			R1602	1-216-809-11	METAL CHIP	100	5%	1/10W
R806	1-216-864-11	SHORT CHIP	0			R1605	1-216-809-11	METAL CHIP	100	5%	1/10W
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1606	1-216-809-11	METAL CHIP	100	5%	1/10W
R816	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1607	1-216-864-11	SHORT CHIP	0		
R817	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1608	1-216-809-11	METAL CHIP	100	5%	1/10W
R818	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1611	1-216-864-11	SHORT CHIP	0		
R819	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1612	1-216-864-11	SHORT CHIP	0		
R820	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R821	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R1617	1-216-833-11	METAL CHIP	10K	5%	1/10W
R822	1-216-801-11	METAL CHIP	22	5%	1/10W	R1620	1-216-809-11	METAL CHIP	100	5%	1/10W
R823	1-216-801-11	METAL CHIP	22	5%	1/10W	R1626	1-216-864-11	SHORT CHIP	0		
R824	1-216-801-11	METAL CHIP	22	5%	1/10W	R1628	1-216-864-11	SHORT CHIP	0		
R825	1-216-801-11	METAL CHIP	22	5%	1/10W	R1630	1-216-864-11	SHORT CHIP	0		
R826	1-216-801-11	METAL CHIP	22	5%	1/10W	R1631	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R827	1-216-801-11	METAL CHIP	22	5%	1/10W	R1632	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R829	1-216-827-11	METAL CHIP	3.3K	5%	1/10W	R1633	1-216-833-11	METAL CHIP	10K	5%	1/10W
R835	1-216-864-11	SHORT CHIP	0			R1635	1-216-833-11	METAL CHIP	10K	5%	1/10W
R840	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1636	1-216-833-11	METAL CHIP	10K	5%	1/10W
R841	1-216-833-11	METAL CHIP	10K	5%	1/10W	R1640	1-216-833-11	METAL CHIP	10K	5%	1/10W
R842	1-216-807-11	METAL CHIP	68	5%	1/10W	R1642	1-216-841-11	METAL CHIP	47K	5%	1/10W
R843	1-216-807-11	METAL CHIP	68	5%	1/10W	R1644	1-216-809-11	METAL CHIP	100	5%	1/10W
R844	1-216-807-11	METAL CHIP	68	5%	1/10W	R1645	1-216-833-11	METAL CHIP	10K	5%	1/10W
R845	1-216-807-11	METAL CHIP	68	5%	1/10W	R1646	1-216-833-11	METAL CHIP	10K	5%	1/10W
R852	1-218-285-11	METAL CHIP	75	5%	1/10W	R1647	1-216-849-11	METAL CHIP	220K	5%	1/10W
R853	1-216-807-11	METAL CHIP	68	5%	1/10W	R1648	1-216-809-11	METAL CHIP	100	5%	1/10W
R854	1-216-807-11	METAL CHIP	68	5%	1/10W	R1649	1-216-809-11	METAL CHIP	100	5%	1/10W
R855	1-218-285-11	METAL CHIP	75	5%	1/10W	R1650	1-216-809-11	METAL CHIP	100	5%	1/10W
R856	1-216-807-11	METAL CHIP	68	5%	1/10W	R1651	1-216-864-11	SHORT CHIP	0		
R857	1-216-807-11	METAL CHIP	68	5%	1/10W	R1652	1-216-809-11	METAL CHIP	100	5%	1/10W
R858	1-216-807-11	METAL CHIP	68	5%	1/10W	R1653	1-216-809-11	METAL CHIP	100	5%	1/10W

AV-84

CN-199

FL-141

Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description	Remarks
R1654	1-216-864-11	SHORT CHIP	0				CN-199 (J) COMPL (NOT SUPPLIED)	*****
R1655	1-216-833-11	METAL CHIP	10K	5%	1/10W			*****
R1656	1-216-864-11	SHORT CHIP	0				CN1801	1-818-021-11 PIN, CONNECTOR 40P
R1658	1-216-833-11	METAL CHIP	10K	5%	1/10W			
R1659	1-216-864-11	SHORT CHIP	0			0	A-1056-646-A	FL-141 COMPL
R1660	1-216-833-11	METAL CHIP	10K	5%	1/10W			*****
R1661	1-216-833-11	METAL CHIP	10K	5%	1/10W			< CAPACITOR >
R1662	1-216-833-11	METAL CHIP	10K	5%	1/10W	C101	1-124-589-11	ELECT
R1663	1-216-833-11	METAL CHIP	10K	5%	1/10W	C102	1-162-970-11	CERAMIC CHIP
R1664	1-216-833-11	METAL CHIP	10K	5%	1/10W	C105	1-115-339-11	CERAMIC CHIP
R1665	1-216-833-11	METAL CHIP	10K	5%	1/10W	C106	1-162-922-11	CERAMIC CHIP
R1666	1-216-833-11	METAL CHIP	10K	5%	1/10W	C109	1-162-927-11	CERAMIC CHIP
R1668	1-216-809-11	METAL CHIP	100	5%	1/10W	C110	1-162-927-11	CERAMIC CHIP
R1669	1-216-809-11	METAL CHIP	100	5%	1/10W	C112	1-125-972-91	ELECT
R1670	1-216-864-11	SHORT CHIP	0			C113	1-106-363-12	MYLAR
R1671	1-216-864-11	SHORT CHIP	0			C114	1-115-339-11	CERAMIC CHIP
R1672	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	C115	1-128-131-11	ELECT
R1673	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	C116	1-115-339-11	CERAMIC CHIP
R1674	1-216-833-11	METAL CHIP	10K	5%	1/10W	C118	1-115-339-11	CERAMIC CHIP
R1676	1-216-833-11	METAL CHIP	10K	5%	1/10W			< CONNECTOR >
R1677	1-216-864-11	SHORT CHIP	0			CN102	1-794-479-11	CONNECTOR, FFC/FPC 9P
R1678	1-216-864-11	SHORT CHIP	0			CN105	1-573-489-11	PIN, CONNECTOR (PC BOARD) 11P
R1683	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W			< DIODE >
R1684	1-218-855-11	METAL CHIP	2.2K	0.50%	1/10W	D101	8-719-988-61	DIODE 1SS355TE-17
R1685	1-216-864-11	SHORT CHIP	0			D104	8-719-067-40	DIODE STZ6.8N-T146
R1686	1-216-864-11	SHORT CHIP	0			D105	8-719-067-40	DIODE STZ6.8N-T146
R1687	1-218-859-11	METAL CHIP	3.3K	0.50%	1/10W	D106	8-719-067-40	DIODE STZ6.8N-T146
R1688	1-218-871-11	METAL CHIP	10K	0.50%	1/10W	D107	8-719-067-40	DIODE STZ6.8N-T146
R1689	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	D108	8-719-067-40	DIODE STZ6.8N-T146
R1693	1-218-865-11	METAL CHIP	5.6K	0.50%	1/10W	D109	8-719-067-40	DIODE STZ6.8N-T146
R1695	1-216-864-11	SHORT CHIP	0			D110	8-719-988-61	DIODE 1SS355TE-17
R1696	1-216-864-11	SHORT CHIP	0			D111	8-719-988-61	DIODE 1SS355TE-17
R1698	1-218-875-11	METAL CHIP	15K	0.50%	1/10W	D112	8-719-988-61	DIODE 1SS355TE-17
R1699	1-216-832-11	METAL CHIP	8.2K	5%	1/10W			
R1700	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	D113	8-719-083-70	DIODE UDZSTE-1727B
R1701	1-216-833-11	METAL CHIP	10K	5%	1/10W	D114	8-719-422-62	DIODE MA8062-L-TX
R1702	1-216-833-11	METAL CHIP	10K	5%	1/10W			
R1703	1-216-833-11	METAL CHIP	10K	5%	1/10W			< TERMINAL >
R1704	1-216-833-11	METAL CHIP	10K	5%	1/10W	ET101	1-537-738-21	TERMINAL, EARTH
R1705	1-216-295-91	SHORT CHIP	0					< FERRITE BEAD >
R1706	1-216-295-91	SHORT CHIP	0					
R1707	1-216-833-11	METAL CHIP	10K	5%	1/10W			
R1708	1-216-833-11	METAL CHIP	10K	5%	1/10W	FB101	1-414-233-22	FERRITE
R1709	1-216-833-11	METAL CHIP	10K	5%	1/10W	FB102	1-414-233-22	FERRITE
						FB103	1-414-233-22	FERRITE
								< IC >
TU401	8-598-612-10	TUNER, FSS BTF-DA401				IC101	6-705-405-01	IC ML9208-02MBZ03B
								< JUMPER RESISTOR >
X601	1-795-243-21	VIBRATOR, CRYSTAL (SMD)						
X602	1-781-913-11	VIBRATOR, CRYSTAL				JR101	1-216-296-11	SHORT CHIP
X603	1-579-041-11	VIBRATOR, CRYSTAL				JR102	1-216-296-11	SHORT CHIP
X1101	1-781-472-21	VIBRATOR, CERAMIC				JR103	1-216-296-11	SHORT CHIP
						JR104	1-216-296-11	SHORT CHIP
						JR105	1-216-296-11	SHORT CHIP

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
JR106	1-216-296-11	SHORT CHIP	0	O	A-1056-648-A	FR-216 (UB) COMPL *****	
JR107	1-216-296-11	SHORT CHIP	0				< CAPASITOR >
JR108	1-216-295-91	SHORT CHIP	0				
JR109	1-216-295-91	SHORT CHIP	0				
JR110	1-216-296-11	SHORT CHIP	0	C062	1-107-726-91	CERAMIC CHIP	0.01uF 10.00% 16V
JR111	1-216-295-91	SHORT CHIP	0	C063	1-107-726-91	CERAMIC CHIP	0.01uF 10.00% 16V
JR112	1-216-296-11	SHORT CHIP	0	C064	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V
JR113	1-216-296-11	SHORT CHIP	0				< CONNECTOR >
JR114	1-216-296-11	SHORT CHIP	0				
JR115	1-216-296-11	SHORT CHIP	0	CN001	1-793-599-11	CONNECTOR, FFC/FPC 17P	
JR116	1-216-296-11	SHORT CHIP	0	CN002	1-794-473-11	CONNECTOR, FFC/FPC 9P	
JR117	1-216-295-91	SHORT CHIP	0				< DIODE >
JR118	1-216-296-11	SHORT CHIP	0				
JR119	1-216-296-11	SHORT CHIP	0	D001	8-719-077-79	DIODE SLR-332VRT32	
JR120	1-216-295-91	SHORT CHIP	0				
JR121	1-216-296-11	SHORT CHIP	0				< SWITCH >
JR122	1-216-295-91	SHORT CHIP	0				
JR123	1-216-295-91	SHORT CHIP	0	EN030	1-786-502-21	SWITCH, TACTILE	
JR124	1-216-295-91	SHORT CHIP	0				< IC >
JR125	1-216-296-11	SHORT CHIP	0				
JR130	1-216-295-91	SHORT CHIP	0	IC061	6-600-350-01	IC GP1UM27SXK1F	
				IC062	8-752-842-96	IC NJU3711M(TE2)	
							< JUMPER RESISTOR >
L101	1-412-533-21	INDUCTOR	47uH	JR001	1-216-296-11	SHORT CHIP	0
				JR002	1-216-296-11	SHORT CHIP	0
				JR003	1-216-296-11	SHORT CHIP	0
				JR004	1-216-296-11	SHORT CHIP	0
				JR005	1-216-296-11	SHORT CHIP	0
ND101	1-518-948-11	INDICATOR TUBE, FLUORESCENT		JR006	1-216-295-91	SHORT CHIP	0
				JR007	1-216-296-11	SHORT CHIP	0
				JR008	1-216-296-11	SHORT CHIP	0
				JR009	1-216-296-11	SHORT CHIP	0
				JR012	1-216-295-91	SHORT CHIP	0
							< RESISTOR >
R102	1-216-825-11	METAL CHIP	2.2K	JR013	1-216-295-91	SHORT CHIP	0
R104	1-216-809-11	METAL CHIP	100	JR014	1-216-295-91	SHORT CHIP	0
R105	1-216-809-11	METAL CHIP	100	JR015	1-216-296-11	SHORT CHIP	0
R106	1-216-809-11	METAL CHIP	100	JR016	1-216-296-11	SHORT CHIP	0
R107	1-216-809-11	METAL CHIP	100	JR017	1-216-295-91	SHORT CHIP	0
R108	1-216-827-11	METAL CHIP	3.3K	JR018	1-216-295-91	SHORT CHIP	0
R109	1-216-864-11	SHORT CHIP	0	JR019	1-216-296-11	SHORT CHIP	0
R110	1-216-864-11	SHORT CHIP	0	JR020	1-216-296-11	SHORT CHIP	0
R111	1-216-864-11	SHORT CHIP	0	JR021	1-216-296-11	SHORT CHIP	0
R112	1-218-285-11	METAL CHIP	75	JR022	1-216-296-11	SHORT CHIP	0
R113	1-218-285-11	METAL CHIP	75	JR023	1-216-295-91	SHORT CHIP	0
R114	1-218-285-11	METAL CHIP	75	JR024	1-216-295-91	SHORT CHIP	0
R115	1-216-849-11	METAL CHIP	220K	JR025	1-216-295-91	SHORT CHIP	0
R116	1-216-849-11	METAL CHIP	220K	JR026	1-216-296-11	SHORT CHIP	0
R118	1-216-833-11	METAL CHIP	10K	JR027	1-216-295-91	SHORT CHIP	0
R120	1-216-838-11	METAL CHIP	27K	JR028	1-216-295-91	SHORT CHIP	0
				JR029	1-216-295-91	SHORT CHIP	0
				JR030	1-216-296-11	SHORT CHIP	0
				JR031	1-216-295-91	SHORT CHIP	0
				JR032	1-216-296-11	SHORT CHIP	0
				JR033	1-216-295-91	SHORT CHIP	0
				JR034	1-216-296-11	SHORT CHIP	0
				JR035	1-216-296-11	SHORT CHIP	0
T101	1-443-137-11	TRANSFORMER, DC-DC CONVERTER					

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks	
		< TRANSISTOR >							< CONNECTOR >					
Q001	8-729-027-43	TRANSISTOR DTC114EKA-T146					CN3	1-778-318-21	CONNECTOR					
Q002	8-729-010-05	TRANSISTOR MSB709-RT1							< DIODE >					
		< RESISTOR >							< DIODE >					
R001	1-216-817-11	METAL CHIP	470	5%	1/10W		D106	8-719-061-02	DIODE PR1003					
R012	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		D107	8-719-901-33	DIODE 1SS33					
R013	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		D108	8-719-901-33	DIODE 1SS33					
R014	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		D109	8-719-901-33	DIODE 1SS33					
R015	1-216-830-11	METAL CHIP	5.6K	5%	1/10W		D303	8-719-921-20	DIODE 1SS119					
R016	1-216-832-11	METAL CHIP	8.2K	5%	1/10W		D304	8-719-921-20	DIODE 1SS119					
R017	1-216-837-11	METAL CHIP	22K	5%	1/10W		D451	8-719-921-20	DIODE 1SS119					
R022	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		D452	8-719-921-20	DIODE 1SS119					
R023	1-216-825-11	METAL CHIP	2.2K	5%	1/10W		D601	8-719-210-21	DIODE 11EQS04					
R024	1-216-827-11	METAL CHIP	3.3K	5%	1/10W				< IC >					
R025	1-216-830-11	METAL CHIP	5.6K	5%	1/10W		IC301	8-759-632-07	IC M5237ML					
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/10W		IC401	8-759-007-33	IC TL431CLP					
R027	1-216-837-11	METAL CHIP	22K	5%	1/10W				< TRANSISTOR >					
R032	1-216-825-11	METAL CHIP	2.2K	5%	1/10W				< TRANSISTOR >					
R033	1-216-825-11	METAL CHIP	2.2K	5%	1/10W				< TRANSISTOR >					
R034	1-216-827-11	METAL CHIP	3.3K	5%	1/10W		Q451	8-729-901-81	TRANSISTOR 2SC2412					
R035	1-216-830-11	METAL CHIP	5.6K	5%	1/10W									
R036	1-216-832-11	METAL CHIP	8.2K	5%	1/10W									
R037	1-216-837-11	METAL CHIP	22K	5%	1/10W									
R051	1-216-864-11	SHORT CHIP	0											
R053	1-216-825-11	METAL CHIP	2.2K	5%	1/10W									
R054	1-216-829-11	METAL CHIP	4.7K	5%	1/10W									
R061	1-216-864-11	SHORT CHIP	0											
R063	1-216-864-11	SHORT CHIP	0											
		< SWITCH >												
S012	1-786-726-11	SWITCH, TACTILE												
S013	1-786-726-11	SWITCH, TACTILE												
S014	1-786-726-11	SWITCH, TACTILE												
S015	1-786-726-11	SWITCH, TACTILE												
S016	1-786-726-11	SWITCH, TACTILE												
S017	1-786-726-11	SWITCH, TACTILE												
S021	1-786-726-11	SWITCH, TACTILE												
S022	1-786-726-11	SWITCH, TACTILE												
S023	1-786-726-11	SWITCH, TACTILE												
S024	1-786-726-11	SWITCH, TACTILE												
S025	1-786-726-11	SWITCH, TACTILE												
S026	1-786-726-11	SWITCH, TACTILE												
S027	1-786-726-11	SWITCH, TACTILE												
S036	1-786-726-11	SWITCH, TACTILE												
S037	1-786-726-11	SWITCH, TACTILE												
S041	1-786-726-11	SWITCH, TACTILE												
<hr/>														
▲	1-468-842-12	POWER BLOCK	*****											
			< CAPACITOR >											
△C101	1-104-705-11	CAPACITOR	0.1uF	400V										
△C102	1-104-705-11	CAPACITOR	150uF	400V										

Note :
The components identified by mark ▲ or dotted line with mark ▲ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ▲ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

RD-50

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C1330	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1711	1-162-916-11	CERAMIC CHIP	12PF 5.00% 50V
C1332	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1712	1-162-916-11	CERAMIC CHIP	12PF 5.00% 50V
C1333	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1805	1-126-390-11	ELECT CHIP	22uF 20.00% 6.3V
C1339	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1806	1-126-390-11	ELECT CHIP	22uF 20.00% 6.3V
C1340	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V	C1807	1-126-394-11	ELECT CHIP	10uF 20.00% 16V
C1341	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1810	1-126-394-11	ELECT CHIP	10uF 20.00% 16V
C1342	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1811	1-126-206-11	ELECT CHIP	100uF 20.00% 6.3V
C1346	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1812	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V
C1347	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1813	1-126-394-11	ELECT CHIP	10uF 20.00% 16V
C1349	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1815	1-104-610-11	ELECT CHIP	47uF 20.00% 4V
C1350	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1816	1-104-610-11	ELECT CHIP	47uF 20.00% 4V
C1353	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	C1901	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V
C1354	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	< CONNECTOR >			
C1355	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	CN103	1-764-177-11	PIN, CONNECTOR (SMD)(1.5MM) 7P	
C1356	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	CN1903	1-794-707-11	CONNECTOR, FFC/FPC 25P	
C1357	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	< DIODE >			
C1358	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D101	8-719-066-17	DIODE FTZ6.8E-T148	
C1359	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D202	8-719-988-61	DIODE 1SS355TE-17	
C1360	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D1601	8-719-988-61	DIODE 1SS355TE-17	
C1361	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	D1801	8-719-075-77	DIODE EC10DA40-TE12	
C1362	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	< FERRITE BEAD >			
C1363	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB901	1-469-324-21	FERRITE	0uH
C1364	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1801	1-469-324-21	FERRITE	0uH
C1365	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1802	1-469-324-21	FERRITE	0uH
C1366	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1803	1-469-324-21	FERRITE	0uH
C1367	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1804	1-469-324-21	FERRITE	0uH
C1368	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1805	1-469-324-21	FERRITE	0uH
C1369	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FB1901	1-469-083-21	FERRITE	0uH
C1371	1-124-779-21	ELECT CHIP	10uF 20.00% 16V	< FILTER >			
C1372	1-124-779-21	ELECT CHIP	10uF 20.00% 16V	FL101	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1374	1-124-779-21	ELECT CHIP	10uF 20.00% 16V	FL103	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1376	1-126-206-11	ELECT CHIP	100uF 20.00% 6.3V	FL201	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1377	1-107-826-11	CERAMIC CHIP	0.1uF 10.00% 16V	FL302	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1401	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V	FL501	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1501	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL802	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1502	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL901	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1503	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL902	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1504	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1101	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1505	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1102	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1506	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1201	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1508	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1202	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1509	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1302	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1510	1-124-779-21	ELECT CHIP	10uF 20.00% 16V	FL1304	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1511	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1305	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1512	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1701	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1513	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1801	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1514	1-164-943-11	CERAMIC CHIP	0.01uF 10.00% 16V	FL1802	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1601	1-162-970-11	CERAMIC CHIP	0.01uF 10.00% 25V	FL1803	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1602	1-162-964-11	CERAMIC CHIP	0.001uF 10.00% 50V	FL1804	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1603	1-127-715-91	CERAMIC CHIP	0.22uF 10% 16V	FL1805	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
C1604	1-124-779-21	ELECT CHIP	10uF 20.00% 16V				
C1701	1-124-779-21	ELECT CHIP	10uF 20.00% 16V				
C1702	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1703	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1704	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1705	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1707	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1708	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1709	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				
C1710	1-125-777-11	CERAMIC CHIP	0.1uF 10.00% 10V				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks				
< IC >											
IC103	6-705-379-01	IC HD6417306BL200V		IC1704	8-759-679-55	IC SN74LVC08APWR					
IC104	8-759-573-97	IC SN74LVC541APWR		IC1802	6-705-292-01	IC PQ018EH02ZPH					
IC106	6-703-875-01	IC CDCVF2505PWR		IC1803	6-704-923-01	IC PQ015EZ01ZPH					
IC108	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y		IC1804	6-703-756-01	IC PQ1L503M2SPQ					
IC108	6-705-755-01	IC K4S561632E-UC75T		< COIL >							
IC108	6-706-007-01	IC HY57V561620CTP-HDR		L701	1-469-967-21	INDUCTOR	10uH				
IC109	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y		L702	1-469-967-21	INDUCTOR	10uH				
IC109	6-705-755-01	IC K4S561632E-UC75T		L1301	1-400-145-21	INDUCTOR	47uH				
IC109	6-706-007-01	IC HY57V561620CTP-HDR		< TRANSISTOR >							
IC111	6-705-378-01	IC CAT24WC32W-TE13		Q1301	8-729-010-05	TRANSISTOR MSB709-RT1					
IC112	6-703-583-01	IC SN74ACT08PWR		Q1302	8-729-010-05	TRANSISTOR MSB709-RT1					
IC201	6-705-297-01	IC MBM29Z0003PCN-KE1		Q1303	8-729-010-05	TRANSISTOR MSB709-RT1					
IC204	6-705-297-01	IC MBM29Z0003PCN-KE1		Q1304	8-729-010-05	TRANSISTOR MSB709-RT1					
IC301	6-701-025-01	IC SN74LVC16244ADGGR		Q1305	8-729-010-05	TRANSISTOR MSB709-RT1					
IC302	6-701-025-01	IC SN74LVC16244ADGGR		Q1306	8-729-010-05	TRANSISTOR MSB709-RT1					
IC303	8-759-392-81	IC SN74LVC16245ADGGR		< RESISTOR >							
IC304	8-759-392-81	IC SN74LVC16245ADGGR		R102	1-218-941-81	RES-CHIP	100	5%	1/16W		
IC305	6-701-025-01	IC SN74LVC16244ADGGR		R103	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC306	6-701-025-01	IC SN74LVC16244ADGGR		R104	1-218-941-81	RES-CHIP	100	5%	1/16W		
IC307	8-759-392-81	IC SN74LVC16245ADGGR		R105	1-218-941-81	RES-CHIP	100	5%	1/16W		
IC308	6-701-025-01	IC SN74LVC16244ADGGR		R106	1-218-990-11	SHORT CHIP	0				
IC309	6-701-025-01	IC SN74LVC16244ADGGR		R118	1-218-990-11	SHORT CHIP	0				
IC310	8-759-392-81	IC SN74LVC16245ADGGR		R120	1-218-990-11	SHORT CHIP	0				
IC401	8-759-680-48	IC TC7WH157FK(TE85R)		R121	1-218-990-11	SHORT CHIP	0				
IC402	6-705-336-01	IC K9F2808U0C-PCB0T		R122	1-218-990-11	SHORT CHIP	0				
IC501	6-705-324-01	IC CXD9778R		R123	1-218-990-11	SHORT CHIP	0				
IC701	6-705-312-01	IC S-T111B33MC-OGSTFG		R134	1-218-961-11	RES-CHIP	4.7K	5%	1/16W		
IC702	6-706-360-01	IC TVP5147PFP		R135	1-218-961-11	RES-CHIP	4.7K	5%	1/16W		
IC703	6-706-280-01	IC PQ1M185M2SPQ		R136	1-218-990-11	SHORT CHIP	0				
IC803	6-705-295-01	IC CXD9779R		R137	1-218-864-11	SHORT CHIP	0				
IC901	6-705-234-01	IC UPD61052GD-LML-A		R140	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC902	6-705-043-01	IC IC42S16400-7TG		R141	1-218-990-11	SHORT CHIP	0				
IC902	6-706-077-01	IC HY57V641620HGTP-P-DR		R143	1-218-864-11	SHORT CHIP	0				
IC903	6-705-043-01	IC IC42S16400-7TG		R144	1-218-961-11	RES-CHIP	4.7K	5%	1/16W		
IC903	6-706-077-01	IC HY57V641620HGTP-P-DR		R145	1-218-961-11	RES-CHIP	4.7K	5%	1/16W		
IC1101	6-705-298-01	IC CXD9777GG		R146	1-218-961-11	RES-CHIP	4.7K	5%	1/16W		
IC1102	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y		R149	1-218-938-11	RES-CHIP	56	5%	1/16W		
IC1102	6-705-755-01	IC K4S561632E-UC75T		R150	1-218-929-11	RES-CHIP	10	5%	1/16W		
IC1102	6-706-007-01	IC HY57V561620CTP-HDR		R152	1-218-929-11	RES-CHIP	10	5%	1/16W		
IC1201	6-705-311-01	IC S-T111B18MC-OGDTFG		R154	1-218-938-11	RES-CHIP	56	5%	1/16W		
IC1202	8-752-416-45	IC CXD1935Q		R155	1-218-938-11	RES-CHIP	56	5%	1/16W		
IC1203	6-705-043-01	IC IC42S16400-7TG		R161	1-218-957-11	RES-CHIP	2.2K	5%	1/16W		
IC1203	6-706-077-01	IC HY57V641620HGTP-P-DR		R162	1-218-937-11	RES-CHIP	47	5%	1/16W		
IC1206	8-759-679-55	IC SN74LVC08APWR		R163	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1301	8-752-424-75	IC CXD4701GB		R164	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1304	6-704-838-01	IC MT48LC2M32B2P-7-Y94W		R165	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1305	6-704-838-01	IC MT48LC2M32B2P-7-Y94W		R166	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1306	6-705-312-01	IC S-T111B33MC-OGSTFG		R167	1-218-929-11	RES-CHIP	10	5%	1/16W		
IC1402	8-759-549-01	IC SN74LV125APWR		R170	1-218-990-11	SHORT CHIP	0				
IC1501	6-705-008-11	IC CXD9722ATQ		R171	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1502	6-703-845-01	IC IC42S16100-7TG (T&R)		R172	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1502	6-705-992-11	IC HY57V161610ETP-7DR		R174	1-218-957-11	RES-CHIP	2.2K	5%	1/16W		
IC1601	6-703-704-01	IC AK4381VT-E2		R175	1-218-990-11	SHORT CHIP	0				
IC1701	8-759-679-55	IC SN74LVC08APWR		R176	1-218-938-11	RES-CHIP	56	5%	1/16W		
IC1702	6-705-192-01	IC BU2367FV-FE2		R179	1-218-965-11	RES-CHIP	10K	5%	1/16W		
IC1703	8-759-679-55	IC SN74LVC08APWR		R181	1-218-957-11	RES-CHIP	2.2K	5%	1/16W		

RD-50

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R182	1-218-965-11	RES-CHIP	10K	5%	1/16W	R503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R183	1-218-965-11	RES-CHIP	10K	5%	1/16W	R504	1-218-965-11	RES-CHIP	10K	5%	1/16W
R184	1-218-965-11	RES-CHIP	10K	5%	1/16W	R510	1-218-965-11	RES-CHIP	10K	5%	1/16W
R185	1-218-965-11	RES-CHIP	10K	5%	1/16W	R511	1-218-965-11	RES-CHIP	10K	5%	1/16W
R186	1-218-965-11	RES-CHIP	10K	5%	1/16W	R512	1-218-965-11	RES-CHIP	10K	5%	1/16W
R187	1-218-990-11	SHORT CHIP	0			R513	1-218-965-11	RES-CHIP	10K	5%	1/16W
R189	1-218-990-11	SHORT CHIP	0			R515	1-218-965-11	RES-CHIP	10K	5%	1/16W
R190	1-218-938-11	RES-CHIP	56	5%	1/16W	R524	1-218-933-11	RES-CHIP	22	5%	1/16W
R193	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	R525	1-218-933-11	RES-CHIP	22	5%	1/16W
R194	1-218-937-11	RES-CHIP	47	5%	1/16W	R526	1-218-933-11	RES-CHIP	22	5%	1/16W
R206	1-218-965-11	RES-CHIP	10K	5%	1/16W	R528	1-218-990-11	SHORT CHIP	0		
R214	1-218-965-11	RES-CHIP	10K	5%	1/16W	R530	1-218-990-11	SHORT CHIP	0		
R215	1-218-965-11	RES-CHIP	10K	5%	1/16W	R536	1-218-990-11	SHORT CHIP	0		
R224	1-218-990-11	SHORT CHIP	0			R541	1-218-965-11	RES-CHIP	10K	5%	1/16W
R303	1-218-937-11	RES-CHIP	47	5%	1/16W	R544	1-218-965-11	RES-CHIP	10K	5%	1/16W
R308	1-218-938-11	RES-CHIP	56	5%	1/16W	R547	1-218-965-11	RES-CHIP	10K	5%	1/16W
R309	1-218-965-11	RES-CHIP	10K	5%	1/16W	R549	1-218-965-11	RES-CHIP	10K	5%	1/16W
R310	1-218-965-11	RES-CHIP	10K	5%	1/16W	R550	1-218-965-11	RES-CHIP	10K	5%	1/16W
R311	1-218-965-11	RES-CHIP	10K	5%	1/16W	R552	1-218-965-11	RES-CHIP	10K	5%	1/16W
R314	1-218-933-11	RES-CHIP	22	5%	1/16W	R554	1-218-965-11	RES-CHIP	10K	5%	1/16W
R315	1-218-938-11	RES-CHIP	56	5%	1/16W	R556	1-218-965-11	RES-CHIP	10K	5%	1/16W
R316	1-218-937-11	RES-CHIP	47	5%	1/16W	R558	1-218-965-11	RES-CHIP	10K	5%	1/16W
R317	1-218-938-11	RES-CHIP	56	5%	1/16W	R561	1-218-965-11	RES-CHIP	10K	5%	1/16W
R319	1-218-965-11	RES-CHIP	10K	5%	1/16W	R568	1-218-965-11	RES-CHIP	10K	5%	1/16W
R322	1-218-965-11	RES-CHIP	10K	5%	1/16W	R572	1-218-965-11	RES-CHIP	10K	5%	1/16W
R323	1-218-939-11	RES-CHIP	68	5%	1/16W	R573	1-218-965-11	RES-CHIP	10K	5%	1/16W
R324	1-218-939-11	RES-CHIP	68	5%	1/16W	R576	1-218-965-11	RES-CHIP	10K	5%	1/16W
R325	1-218-939-11	RES-CHIP	68	5%	1/16W	R577	1-218-965-11	RES-CHIP	10K	5%	1/16W
R326	1-218-939-11	RES-CHIP	68	5%	1/16W	R579	1-218-990-11	SHORT CHIP	0		
R328	1-218-938-11	RES-CHIP	56	5%	1/16W	R580	1-218-965-11	RES-CHIP	10K	5%	1/16W
R329	1-218-938-11	RES-CHIP	56	5%	1/16W	R581	1-218-965-11	RES-CHIP	10K	5%	1/16W
R330	1-218-938-11	RES-CHIP	56	5%	1/16W	R582	1-218-935-11	RES-CHIP	33	5%	1/16W
R335	1-218-965-11	RES-CHIP	10K	5%	1/16W	R583	1-218-965-11	RES-CHIP	10K	5%	1/16W
R345	1-218-990-11	SHORT CHIP	0			R585	1-218-965-11	RES-CHIP	10K	5%	1/16W
R346	1-218-934-11	RES-CHIP	27	5%	1/16W	R587	1-218-965-11	RES-CHIP	10K	5%	1/16W
R347	1-218-935-11	RES-CHIP	33	5%	1/16W	R598	1-218-965-11	RES-CHIP	10K	5%	1/16W
R348	1-218-935-11	RES-CHIP	33	5%	1/16W	R599	1-218-990-11	SHORT CHIP	0		
R349	1-218-936-11	RES-CHIP	39	5%	1/16W	R704	1-218-990-11	SHORT CHIP	0		
R350	1-218-935-11	RES-CHIP	33	5%	1/16W	R706	1-218-990-11	SHORT CHIP	0		
R351	1-218-935-11	RES-CHIP	33	5%	1/16W	R708	1-218-990-11	SHORT CHIP	0		
R352	1-218-933-11	RES-CHIP	22	5%	1/16W	R710	1-218-990-11	SHORT CHIP	0		
R353	1-218-937-11	RES-CHIP	47	5%	1/16W	R711	1-218-990-11	SHORT CHIP	0		
R354	1-218-939-11	RES-CHIP	68	5%	1/16W	R714	1-218-990-11	SHORT CHIP	0		
R355	1-218-939-11	RES-CHIP	68	5%	1/16W	R715	1-218-977-11	RES-CHIP	100K	5%	1/16W
R356	1-218-937-11	RES-CHIP	47	5%	1/16W	R716	1-218-933-11	RES-CHIP	22	5%	1/16W
R358	1-218-937-11	RES-CHIP	47	5%	1/16W	R717	1-218-941-81	RES-CHIP	100	5%	1/16W
R360	1-218-937-11	RES-CHIP	47	5%	1/16W	R718	1-218-933-11	RES-CHIP	22	5%	1/16W
R361	1-218-937-11	RES-CHIP	47	5%	1/16W	R719	1-218-941-81	RES-CHIP	100	5%	1/16W
R363	1-218-965-11	RES-CHIP	10K	5%	1/16W	R720	1-218-965-11	RES-CHIP	10K	5%	1/16W
R364	1-218-965-11	RES-CHIP	10K	5%	1/16W	R722	1-218-990-11	SHORT CHIP	0		
R376	1-218-937-11	RES-CHIP	47	5%	1/16W	R726	1-218-990-11	SHORT CHIP	0		
R377	1-218-938-11	RES-CHIP	56	5%	1/16W	R727	1-218-965-11	RES-CHIP	10K	5%	1/16W
R391	1-218-990-11	SHORT CHIP	0			R729	1-218-965-11	RES-CHIP	10K	5%	1/16W
R393	1-218-990-11	SHORT CHIP	0			R736	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R408	1-218-990-11	SHORT CHIP	0			R737	1-218-990-11	SHORT CHIP	0		
R409	1-218-965-11	RES-CHIP	10K	5%	1/16W	R739	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R411	1-218-953-11	RES-CHIP	1K	5%	1/16W	R740	1-218-965-11	RES-CHIP	10K	5%	1/16W
R424	1-218-965-11	RES-CHIP	10K	5%	1/16W	R826	1-218-935-11	RES-CHIP	33	5%	1/16W
R425	1-218-965-11	RES-CHIP	10K	5%	1/16W	R827	1-218-935-11	RES-CHIP	33	5%	1/16W
R502	1-218-965-11	RES-CHIP	10K	5%	1/16W	R828	1-218-935-11	RES-CHIP	33	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R829	1-218-935-11	RES-CHIP	33	5%	1/16W	R1168	1-218-965-11	RES-CHIP	10K	5%	1/16W
R830	1-218-935-11	RES-CHIP	33	5%	1/16W	R1169	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R831	1-218-935-11	RES-CHIP	33	5%	1/16W	R1170	1-218-935-11	RES-CHIP	33	5%	1/16W
R832	1-218-935-11	RES-CHIP	33	5%	1/16W	R1171	1-218-940-11	RES-CHIP	82	5%	1/16W
R849	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1172	1-218-933-11	RES-CHIP	22	5%	1/16W
R852	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1173	1-218-940-11	RES-CHIP	82	5%	1/16W
R868	1-218-935-11	RES-CHIP	33	5%	1/16W	R1174	1-218-933-11	RES-CHIP	22	5%	1/16W
R871	1-218-935-11	RES-CHIP	33	5%	1/16W	R1175	1-218-933-11	RES-CHIP	22	5%	1/16W
R873	1-218-935-11	RES-CHIP	33	5%	1/16W	R1176	1-218-940-11	RES-CHIP	82	5%	1/16W
R875	1-218-935-11	RES-CHIP	33	5%	1/16W	R1177	1-218-935-11	RES-CHIP	33	5%	1/16W
R879	1-218-935-11	RES-CHIP	33	5%	1/16W	R1181	1-218-940-11	RES-CHIP	82	5%	1/16W
R882	1-218-935-11	RES-CHIP	33	5%	1/16W	R1198	1-218-953-11	RES-CHIP	1K	5%	1/16W
R884	1-218-935-11	RES-CHIP	33	5%	1/16W	R1201	1-216-864-11	SHORT CHIP	0		
R886	1-218-935-11	RES-CHIP	33	5%	1/16W	R1204	1-218-941-81	RES-CHIP	100	5%	1/16W
R888	1-218-935-11	RES-CHIP	33	5%	1/16W	R1205	1-218-933-11	RES-CHIP	22	5%	1/16W
R892	1-218-935-11	RES-CHIP	33	5%	1/16W	R1210	1-218-937-11	RES-CHIP	47	5%	1/16W
R894	1-218-935-11	RES-CHIP	33	5%	1/16W	R1211	1-218-965-11	RES-CHIP	10K	5%	1/16W
R897	1-218-935-11	RES-CHIP	33	5%	1/16W	R1212	1-218-965-11	RES-CHIP	10K	5%	1/16W
R899	1-218-935-11	RES-CHIP	33	5%	1/16W	R1213	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R903	1-218-973-11	RES-CHIP	47K	5%	1/16W	R1214	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R904	1-216-864-11	SHORT CHIP	0			R1219	1-218-990-11	SHORT CHIP	0		
R906	1-218-941-81	RES-CHIP	100	5%	1/16W	R1223	1-218-965-11	RES-CHIP	10K	5%	1/16W
R907	1-218-990-11	SHORT CHIP	0			R1226	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R909	1-218-937-11	RES-CHIP	47	5%	1/16W	R1229	1-218-953-11	RES-CHIP	1K	5%	1/16W
R910	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1230	1-218-929-11	RES-CHIP	10	5%	1/16W
R911	1-218-937-11	RES-CHIP	47	5%	1/16W	R1236	1-218-965-11	RES-CHIP	10K	5%	1/16W
R917	1-218-990-11	SHORT CHIP	0			R1254	1-218-990-11	SHORT CHIP	0		
R918	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1271	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R919	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1274	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R920	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1275	1-218-939-11	RES-CHIP	68	5%	1/16W
R921	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1276	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R924	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1277	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R925	1-218-937-11	RES-CHIP	47	5%	1/16W	R1281	1-218-937-11	RES-CHIP	47	5%	1/16W
R926	1-218-937-11	RES-CHIP	47	5%	1/16W	R1289	1-218-937-11	RES-CHIP	47	5%	1/16W
R927	1-218-937-11	RES-CHIP	47	5%	1/16W	R1290	1-218-937-11	RES-CHIP	47	5%	1/16W
R928	1-218-937-11	RES-CHIP	47	5%	1/16W	R1291	1-218-937-11	RES-CHIP	47	5%	1/16W
R929	1-218-937-11	RES-CHIP	47	5%	1/16W	R1292	1-218-937-11	RES-CHIP	47	5%	1/16W
R930	1-218-937-11	RES-CHIP	47	5%	1/16W	R1301	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R931	1-218-939-11	RES-CHIP	68	5%	1/16W	R1302	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R935	1-218-937-11	RES-CHIP	47	5%	1/16W	R1303	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1027	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1304	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1105	1-218-990-11	SHORT CHIP	0			R1305	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1106	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1306	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1108	1-218-935-11	RES-CHIP	33	5%	1/16W	R1308	1-218-933-11	RES-CHIP	22	5%	1/16W
R1112	1-218-935-11	RES-CHIP	33	5%	1/16W	R1310	1-218-933-11	RES-CHIP	22	5%	1/16W
R1113	1-218-935-11	RES-CHIP	33	5%	1/16W	R1312	1-218-933-11	RES-CHIP	22	5%	1/16W
R1118	1-218-935-11	RES-CHIP	33	5%	1/16W	R1314	1-218-933-11	RES-CHIP	22	5%	1/16W
R1121	1-218-935-11	RES-CHIP	33	5%	1/16W	R1316	1-218-933-11	RES-CHIP	22	5%	1/16W
R1123	1-218-935-11	RES-CHIP	33	5%	1/16W	R1318	1-218-933-11	RES-CHIP	22	5%	1/16W
R1124	1-218-935-11	RES-CHIP	33	5%	1/16W	R1319	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1126	1-218-935-11	RES-CHIP	33	5%	1/16W	R1320	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1142	1-218-935-11	RES-CHIP	33	5%	1/16W	R1321	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1144	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1322	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1145	1-218-935-11	RES-CHIP	33	5%	1/16W	R1324	1-218-990-11	SHORT CHIP	0		
R1149	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1329	1-218-990-11	SHORT CHIP	0		
R1151	1-218-935-11	RES-CHIP	33	5%	1/16W	R1330	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1153	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1331	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R1166	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1332	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1167	1-218-962-11	RES-CHIP	5.6K	5%	1/16W	R1338	1-218-990-11	SHORT CHIP	0		
						R1339	1-218-990-11	SHORT CHIP	0		

RD-50

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R1340	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1738	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1341	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1739	1-218-938-11	RES-CHIP	56	5%	1/16W
R1342	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1741	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1343	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1742	1-218-939-11	RES-CHIP	68	5%	1/16W
R1344	1-218-990-11	SHORT CHIP	0			R1744	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1345	1-218-990-11	SHORT CHIP	0			R1745	1-218-940-11	RES-CHIP	82	5%	1/16W
R1346	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1747	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1347	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1748	1-218-939-11	RES-CHIP	68	5%	1/16W
R1348	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1753	1-216-819-11	METAL CHIP	680	5%	1/10W
R1349	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1803	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1351	1-218-958-11	METAL CHIP	2.7K	0.50%	1/16W	R1804	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1353	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1810	1-216-817-11	METAL CHIP	470	5%	1/10W
R1356	1-218-938-11	RES-CHIP	56	5%	1/16W	R1818	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1359	1-218-938-11	RES-CHIP	56	5%	1/16W	R1901	1-218-990-11	SHORT CHIP	0		
R1362	1-218-938-11	RES-CHIP	56	5%	1/16W	R1903	1-218-990-11	SHORT CHIP	0		
R1363	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1904	1-216-295-91	SHORT CHIP	0		
R1364	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1905	1-218-990-11	SHORT CHIP	0		
R1366	1-218-965-11	RES-CHIP	10K	5%	1/16W	R1906	1-218-990-11	SHORT CHIP	0		
R1382	1-216-803-11	METAL CHIP	33	5%	1/10W	R1907	1-218-990-11	SHORT CHIP	0		
R1383	1-216-803-11	METAL CHIP	33	5%	1/10W	R1908	1-218-990-11	SHORT CHIP	0		
R1384	1-216-803-11	METAL CHIP	33	5%	1/10W	R1909	1-218-990-11	SHORT CHIP	0		
R1385	1-216-803-11	METAL CHIP	33	5%	1/10W	R1910	1-218-990-11	SHORT CHIP	0		
R1386	1-216-803-11	METAL CHIP	33	5%	1/10W	R1911	1-218-990-11	SHORT CHIP	0		
R1387	1-216-803-11	METAL CHIP	33	5%	1/10W	R1912	1-218-990-11	SHORT CHIP	0		
R1388	1-216-803-11	METAL CHIP	33	5%	1/10W	R1913	1-218-990-11	SHORT CHIP	0		
R1389	1-216-803-11	METAL CHIP	33	5%	1/10W	R1914	1-218-990-11	SHORT CHIP	0		
R1390	1-216-803-11	METAL CHIP	33	5%	1/10W	R1915	1-218-990-11	SHORT CHIP	0		
R1391	1-216-803-11	METAL CHIP	33	5%	1/10W	R1916	1-218-990-11	SHORT CHIP	0		
R1392	1-216-803-11	METAL CHIP	33	5%	1/10W	R1917	1-218-990-11	SHORT CHIP	0		
R1393	1-218-937-11	RES-CHIP	47	5%	1/16W	R1918	1-216-864-11	SHORT CHIP	0		
R1395	1-218-937-11	RES-CHIP	47	5%	1/16W	R1919	1-216-864-11	SHORT CHIP	0		
R1396	1-218-990-11	SHORT CHIP	0			R2104	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1446	1-218-965-11	RES-CHIP	10K	5%	1/16W	R2107	1-216-864-11	SHORT CHIP	0		
R1466	1-218-935-11	RES-CHIP	33	5%	1/16W	R2190	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1470	1-218-938-11	RES-CHIP	56	5%	1/16W	R2191	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1472	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3102	1-218-938-11	RES-CHIP	56	5%	1/16W
R1474	1-218-937-11	RES-CHIP	47	5%	1/16W	R3103	1-218-938-11	RES-CHIP	56	5%	1/16W
R1508	1-218-941-81	RES-CHIP	100	5%	1/16W	R3104	1-218-937-11	RES-CHIP	47	5%	1/16W
R1512	1-218-990-11	SHORT CHIP	0			R3107	1-218-935-11	RES-CHIP	33	5%	1/16W
R1603	1-218-941-81	RES-CHIP	100	5%	1/16W	R3110	1-218-938-11	RES-CHIP	56	5%	1/16W
R1604	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3111	1-218-938-11	RES-CHIP	56	5%	1/16W
R1704	1-218-935-11	RES-CHIP	33	5%	1/16W	R3112	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1705	1-218-935-11	RES-CHIP	33	5%	1/16W	R3118	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1706	1-218-935-11	RES-CHIP	33	5%	1/16W	R3119	1-218-938-11	RES-CHIP	56	5%	1/16W
R1707	1-218-935-11	RES-CHIP	33	5%	1/16W	R3122	1-218-941-81	RES-CHIP	100	5%	1/16W
R1709	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3123	1-218-935-11	RES-CHIP	33	5%	1/16W
R1710	1-218-938-11	RES-CHIP	56	5%	1/16W	R3125	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R1712	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3126	1-218-938-11	RES-CHIP	56	5%	1/16W
R1713	1-218-938-11	RES-CHIP	56	5%	1/16W	R3127	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1714	1-218-935-11	RES-CHIP	33	5%	1/16W	R3128	1-218-936-11	RES-CHIP	39	5%	1/16W
R1716	1-218-935-11	RES-CHIP	33	5%	1/16W	R3135	1-218-990-11	SHORT CHIP	0		
R1717	1-218-939-11	RES-CHIP	68	5%	1/16W	R3136	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1720	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3140	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1721	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3143	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1729	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3150	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1730	1-218-940-11	RES-CHIP	82	5%	1/16W	R3153	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1732	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3155	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1733	1-218-940-11	RES-CHIP	82	5%	1/16W	R3156	1-218-938-11	RES-CHIP	56	5%	1/16W
R1735	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3157	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1736	1-218-939-11	RES-CHIP	68	5%	1/16W	R3159	1-218-937-11	RES-CHIP	47	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R3160	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3272	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3163	1-218-938-11	RES-CHIP	56	5%	1/16W	R3273	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3165	1-218-938-11	RES-CHIP	56	5%	1/16W	R3274	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3166	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3280	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3167	1-218-937-11	RES-CHIP	47	5%	1/16W	R3281	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3168	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3282	1-218-990-11	SHORT CHIP	0		
R3170	1-218-938-11	RES-CHIP	56	5%	1/16W	R3287	1-218-939-11	RES-CHIP	68	5%	1/16W
R3172	1-218-938-11	RES-CHIP	56	5%	1/16W	R3293	1-218-937-11	RES-CHIP	47	5%	1/16W
R3173	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3294	1-218-937-11	RES-CHIP	47	5%	1/16W
R3177	1-218-939-11	RES-CHIP	68	5%	1/16W	R3295	1-218-990-11	SHORT CHIP	0		
R3178	1-218-937-11	RES-CHIP	47	5%	1/16W	R3296	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3179	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3297	1-218-938-11	RES-CHIP	56	5%	1/16W
R3180	1-218-938-11	RES-CHIP	56	5%	1/16W	R3298	1-218-938-11	RES-CHIP	56	5%	1/16W
R3181	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3299	1-218-937-11	RES-CHIP	47	5%	1/16W
R3182	1-218-937-11	RES-CHIP	47	5%	1/16W	R3301	1-218-938-11	RES-CHIP	56	5%	1/16W
R3183	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3302	1-218-938-11	RES-CHIP	56	5%	1/16W
R3186	1-218-938-11	RES-CHIP	56	5%	1/16W	R3304	1-218-938-11	RES-CHIP	56	5%	1/16W
R3187	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3305	1-218-938-11	RES-CHIP	56	5%	1/16W
R3189	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3306	1-218-938-11	RES-CHIP	56	5%	1/16W
R3194	1-218-939-11	RES-CHIP	68	5%	1/16W	R3307	1-218-938-11	RES-CHIP	56	5%	1/16W
R3195	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3308	1-218-935-11	RES-CHIP	33	5%	1/16W
R3198	1-218-937-11	RES-CHIP	47	5%	1/16W	R3313	1-216-864-11	SHORT CHIP	0		
R3199	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3315	1-218-990-11	SHORT CHIP	0		
R3201	1-218-938-11	RES-CHIP	56	5%	1/16W	R3316	1-218-938-11	RES-CHIP	56	5%	1/16W
R3202	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3317	1-218-938-11	RES-CHIP	56	5%	1/16W
R3203	1-218-937-11	RES-CHIP	47	5%	1/16W	R3318	1-218-939-11	RES-CHIP	68	5%	1/16W
R3204	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3319	1-218-935-11	RES-CHIP	33	5%	1/16W
R3205	1-218-937-11	RES-CHIP	47	5%	1/16W	R3504	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3206	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3507	1-218-990-11	SHORT CHIP	0		
R3207	1-218-938-11	RES-CHIP	56	5%	1/16W	R3512	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3208	1-218-965-11	RES-CHIP	10K	5%	1/16W	R3513	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3215	1-218-937-11	RES-CHIP	47	5%	1/16W	R3514	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3216	1-218-937-11	RES-CHIP	47	5%	1/16W	R3520	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3217	1-218-935-11	RES-CHIP	33	5%	1/16W	R3529	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3218	1-218-935-11	RES-CHIP	33	5%	1/16W	R3530	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3219	1-218-933-11	RES-CHIP	22	5%	1/16W	R3534	1-216-864-11	SHORT CHIP	0		
R3220	1-218-935-11	RES-CHIP	33	5%	1/16W	R3535	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3221	1-218-933-11	RES-CHIP	22	5%	1/16W	R3537	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3222	1-218-933-11	RES-CHIP	22	5%	1/16W	R3538	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3223	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3540	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3224	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3810	1-218-990-11	SHORT CHIP	0		
R3225	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3811	1-218-935-11	RES-CHIP	33	5%	1/16W
R3226	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3812	1-218-935-11	RES-CHIP	33	5%	1/16W
R3227	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3813	1-218-935-11	RES-CHIP	33	5%	1/16W
R3228	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3814	1-218-935-11	RES-CHIP	33	5%	1/16W
R3229	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3822	1-218-990-11	SHORT CHIP	0		
R3230	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	R3823	1-218-990-11	SHORT CHIP	0		
R3231	1-218-935-11	RES-CHIP	33	5%	1/16W	R3824	1-218-990-11	SHORT CHIP	0		
R3232	1-218-935-11	RES-CHIP	33	5%	1/16W	R3825	1-218-935-11	RES-CHIP	33	5%	1/16W
R3233	1-218-938-11	RES-CHIP	56	5%	1/16W	R3827	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3234	1-218-942-11	RES-CHIP	120	5%	1/16W	R4104	1-218-953-11	RES-CHIP	1K	5%	1/16W
R3237	1-218-937-11	RES-CHIP	47	5%	1/16W	R4111	1-218-929-11	RES-CHIP	10	5%	1/16W
R3238	1-218-990-11	SHORT CHIP	0			R4302	1-218-990-11	SHORT CHIP	0		
R3250	1-218-935-11	RES-CHIP	33	5%	1/16W	R4310	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3251	1-218-939-11	RES-CHIP	68	5%	1/16W	R4311	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3252	1-218-933-11	RES-CHIP	22	5%	1/16W	R4312	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3267	1-218-949-11	RES-CHIP	470	5%	1/16W	R4313	1-218-935-11	RES-CHIP	33	5%	1/16W
R3268	1-218-990-11	SHORT CHIP	0			R4314	1-218-935-11	RES-CHIP	33	5%	1/16W
R3269	1-218-965-11	RES-CHIP	10K	5%	1/16W	R4317	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3270	1-218-939-11	RES-CHIP	68	5%	1/16W	R4319	1-218-937-11	RES-CHIP	47	5%	1/16W

Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks
R4320	1-218-937-11	RES-CHIP	47	5%	1/16W	RB310	1-234-714-11	RES, NETWORK 56X4	(1005)
R4321	1-218-937-11	RES-CHIP	47	5%	1/16W	RB311	1-234-714-11	RES, NETWORK 56X4	(1005)
R4322	1-218-937-11	RES-CHIP	47	5%	1/16W	RB312	1-234-371-21	RES, NETWORK 47X4	(1005)
R4329	1-218-935-11	RES-CHIP	33	5%	1/16W	RB313	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4331	1-218-935-11	RES-CHIP	33	5%	1/16W	RB314	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4332	1-218-935-11	RES-CHIP	33	5%	1/16W	RB315	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4334	1-218-935-11	RES-CHIP	33	5%	1/16W	RB316	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4335	1-218-935-11	RES-CHIP	33	5%	1/16W	RB317	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4336	1-218-935-11	RES-CHIP	33	5%	1/16W	RB318	1-234-702-11	RES, NETWORK 68X4	(1005)
R4337	1-218-935-11	RES-CHIP	33	5%	1/16W	RB319	1-234-702-11	RES, NETWORK 68X4	(1005)
R4338	1-218-929-11	RES-CHIP	10	5%	1/16W	RB320	1-234-702-11	RES, NETWORK 68X4	(1005)
R4339	1-218-935-11	RES-CHIP	33	5%	1/16W	RB321	1-234-702-11	RES, NETWORK 68X4	(1005)
R4340	1-218-929-11	RES-CHIP	10	5%	1/16W	RB322	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4341	1-218-935-11	RES-CHIP	33	5%	1/16W	RB323	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4342	1-218-929-11	RES-CHIP	10	5%	1/16W	RB326	1-234-714-11	RES, NETWORK 56X4	(1005)
R4343	1-218-929-11	RES-CHIP	10	5%	1/16W	RB328	1-242-963-21	RES, NETWORK 33X4	(1005)
R4344	1-218-935-11	RES-CHIP	33	5%	1/16W	RB329	1-242-963-21	RES, NETWORK 33X4	(1005)
R4349	1-218-953-11	RES-CHIP	1K	5%	1/16W	RB330	1-234-714-11	RES, NETWORK 56X4	(1005)
R4350	1-218-953-11	RES-CHIP	1K	5%	1/16W	RB331	1-234-714-11	RES, NETWORK 56X4	(1005)
R4351	1-218-990-11	SHORT CHIP	0			RB332	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4352	1-218-990-11	SHORT CHIP	0			RB333	1-234-378-21	RES, NETWORK 10KX4	(1005)
R4353	1-216-864-11	SHORT CHIP	0			RB336	1-234-378-21	RES, NETWORK 10KX4	(1005)
R5211	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB337	1-234-378-21	RES, NETWORK 10KX4	(1005)
R5222	1-218-965-11	RES-CHIP	10K	5%	1/16W	RB338	1-234-378-21	RES, NETWORK 10KX4	(1005)
< COMPOSITION CIRCUIT BLOCK >									
RB103	1-242-963-21	RES, NETWORK 33X4		(1005)	RB352	1-242-963-21	RES, NETWORK 33X4		(1005)
RB104	1-234-714-11	RES, NETWORK 56X4		(1005)	RB353	1-242-963-21	RES, NETWORK 33X4		(1005)
RB105	1-242-963-21	RES, NETWORK 33X4		(1005)	RB354	1-242-963-21	RES, NETWORK 33X4		(1005)
RB107	1-242-963-21	RES, NETWORK 33X4		(1005)	RB355	1-242-963-21	RES, NETWORK 33X4		(1005)
RB108	1-242-963-21	RES, NETWORK 33X4		(1005)	RB356	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB109	1-242-963-21	RES, NETWORK 33X4		(1005)	RB357	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB110	1-242-963-21	RES, NETWORK 33X4		(1005)	RB358	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB111	1-242-963-21	RES, NETWORK 33X4		(1005)	RB359	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB112	1-242-963-21	RES, NETWORK 33X4		(1005)	RB360	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB113	1-242-963-21	RES, NETWORK 33X4		(1005)	RB361	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB114	1-242-963-21	RES, NETWORK 33X4		(1005)	RB382	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB115	1-242-963-21	RES, NETWORK 33X4		(1005)	RB383	1-234-702-11	RES, NETWORK 68X4		(1005)
RB116	1-242-963-21	RES, NETWORK 33X4		(1005)	RB384	1-234-702-11	RES, NETWORK 68X4		(1005)
RB117	1-242-963-21	RES, NETWORK 33X4		(1005)	RB385	1-234-371-21	RES, NETWORK 47X4		(1005)
RB121	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB386	1-234-371-21	RES, NETWORK 47X4		(1005)
RB122	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB387	1-234-702-11	RES, NETWORK 68X4		(1005)
RB123	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB388	1-234-702-11	RES, NETWORK 68X4		(1005)
RB124	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB389	1-234-702-11	RES, NETWORK 68X4		(1005)
RB125	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB390	1-234-702-11	RES, NETWORK 68X4		(1005)
RB126	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB403	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB127	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB404	1-234-378-21	RES, NETWORK 10KX4		(1005)
RB128	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB701	1-234-370-21	RES, NETWORK 22X4		(1005)
RB129	1-234-377-21	RES, NETWORK 4.7KX4		(1005)	RB702	1-234-370-21	RES, NETWORK 22X4		(1005)
RB130	1-234-372-21	RES, NETWORK 100X4		(1005)	RB801	1-234-400-21	CONDUCTOR, NETWORK		(2010)
RB131	1-234-372-21	RES, NETWORK 100X4		(1005)	RB802	1-234-400-21	CONDUCTOR, NETWORK		(2010)
RB132	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB803	1-242-963-21	RES, NETWORK 33X4		(1005)
RB301	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB804	1-242-963-21	RES, NETWORK 33X4		(1005)
RB302	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB807	1-242-963-21	RES, NETWORK 33X4		(1005)
RB303	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB808	1-242-963-21	RES, NETWORK 33X4		(1005)
RB304	1-234-378-21	RES, NETWORK 10KX4		(1005)	RB809	1-242-963-21	RES, NETWORK 33X4		(1005)
RB305	1-234-371-21	RES, NETWORK 47X4		(1005)	RB810	1-242-963-21	RES, NETWORK 33X4		(1005)
RB306	1-234-371-21	RES, NETWORK 47X4		(1005)	RB901	1-234-377-21	RES, NETWORK 4.7KX4		(1005)
RB307	1-234-371-21	RES, NETWORK 47X4		(1005)	RB902	1-234-371-21	RES, NETWORK 47X4		(1005)
RB308	1-234-371-21	RES, NETWORK 47X4		(1005)	RB903	1-234-371-21	RES, NETWORK 47X4		(1005)
RB309	1-234-714-11	RES, NETWORK 56X4		(1005)	RB904	1-242-963-21	RES, NETWORK 33X4		(1005)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
RB905	1-242-963-21	RES, NETWORK 33X4	(1005)			ACCESSORIES	*****
RB906	1-234-378-21	RES, NETWORK 10KX4	(1005)				
RB1101	1-242-963-21	RES, NETWORK 33X4	(1005)				
RB1102	1-242-963-21	RES, NETWORK 33X4	(1005)				
RB1103	1-242-963-21	RES, NETWORK 33X4	(1005)				
RB1104	1-242-963-21	RES, NETWORK 33X4	(1005)	2-024-212-11		MANUAL, INSTRUCTION (ENGLISH)	
RB1105	1-242-963-21	RES, NETWORK 33X4	(1005)	2-024-212-21		MANUAL, INSTRUCTION (FRENCH)	
RB1121	1-234-371-21	RES, NETWORK 47X4	(1005)	1-765-635-71		CORD, CONNECTION (NTSC)	
RB1122	1-234-371-21	RES, NETWORK 47X4	(1005)	1-751-271-71		CORD, CONNECTION (AV)	
RB1123	1-242-963-21	RES, NETWORK 33X4	(1005)	1-823-701-11		CORD, POWER	
RB1124	1-242-963-21	RES, NETWORK 33X4	(1005)	1-478-722-11		REMOTE COMMANDER (RMT-D205A)	
RB1125	1-242-963-21	RES, NETWORK 33X4	(1005)	3-071-119-91		LID,BATTERY (FOR RMT-D205A)	
RB1126	1-242-963-21	RES, NETWORK 33X4	(1005)	1-759-586-21		CONTROLER, VIDEO	
RB1201	1-234-371-21	RES, NETWORK 47X4	(1005)	2-024-239-11		GUIDE, QUICK START (ENGLISH)	
RB1202	1-234-371-21	RES, NETWORK 47X4	(1005)	2-024-239-21		GUIDE, QUICK START (FRENCH)	
RB1203	1-234-400-21	CONDUCTOR, NETWORK	(2010)				
RB1204	1-234-400-21	CONDUCTOR, NETWORK	(2010)				
RB1205	1-234-400-21	CONDUCTOR, NETWORK	(2010)				
RB1206	1-234-400-21	CONDUCTOR, NETWORK	(2010)				
RB1307	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1308	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1309	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1310	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1311	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1312	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1313	1-242-963-21	RES, NETWORK 33X4	(1005)				
RB1314	1-242-963-21	RES, NETWORK 33X4	(1005)				
RB1316	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1317	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1318	1-234-702-11	RES, NETWORK 68X4	(1005)				
RB1319	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1320	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1321	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1322	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1323	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1324	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1325	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1326	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1327	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1328	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1329	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1330	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1331	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1332	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1333	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB1334	1-234-371-21	RES, NETWORK 47X4	(1005)				
RB2117	1-234-378-21	RES, NETWORK 10KX4	(1005)				
RB2118	1-234-378-21	RES, NETWORK 10KX4	(1005)				
< THERMISTOR >							
TH1901	1-803-384-11	THERMISTOR (1608)					
< VIBRATOR >							
X102	1-795-885-21	VIBRATOR, CRYSTAL (SMD)					
X701	1-795-545-21	VIBRATOR,CRYSTAL(SMD) (14.31818MHz)					
X1701	1-781-867-21	VIBRATOR, CRYSTAL					

MEMO

